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# Improving the services of a knowledge intensive business service in a principal-agent relationship in the Dutch life sciences and health sector

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*The case of the innovation program Life Sciences & Health*

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Master Program Science & Innovation Management

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## SUMMARY

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The Ministry of Economic affairs has appointed eight innovation programs to create a network of large companies, SME's and knowledge institutions within a specific sector, in which interaction and innovation is stimulated. One of these innovation programs is 'Life Sciences & Health' (LSH). The aim of this innovation program is to improve the innovation and investment climate of the Dutch life sciences and health sector. One of the objectives of the program is to reduce the time of valorization of fundamental knowledge into socio-economic benefits. By removing the hurdles of the life sciences and health sector, LSH tries to stimulate the innovativeness and profits of the organizations and to improve the healthcare of patients by providing services to the stakeholders in this sector.

Stakeholders in the sector have to collaborate and interact with LSH when they make use of the services of LSH. When the goals, perceptions and services of LSH are not in line with the characteristics of the stakeholders, a difference in congruence will come in existence, which leads to dysfunctional relationships between them. The aim of this research is to contribute to the success of the innovation program by decreasing the differences in characteristics like goals, perceptions and services between stakeholders and LSH. The research question of this research is therefore: *'How can the organization 'Life Sciences & Health', functioning as a knowledge intensive business service in a principal agent relationship with its stakeholders decrease the asymmetry problems between them in order to improve its services towards the stakeholders and to diminish the differences in congruence between them and strengthen the commitment of the stakeholders towards the innovation program?'*

In this research, not all involved stakeholders of the life sciences and health sector are included, but three stakeholder groups are identified as most important stakeholders for LSH. Those stakeholders are small and medium sized enterprises (SME's), technology transfer offices (TTO's) and regional initiatives (RI's). To be able to detect the differences in characteristics between LSH and those stakeholders, a theoretical framework combining the principal-agent theory and the theory of KIBS is used. This theoretical frameworks compares both the organizational and service characteristics of the stakeholders with those of LSH. The differences in characteristics are classified in asymmetry problems. A distinction is made in differences in characteristics between LSH and the stakeholders and in differences in characteristics between the different groups of stakeholders. The asymmetries between LSH and the stakeholder groups are goal asymmetry, perception asymmetry and service compatibility. Asymmetries between the different stakeholders are goal asymmetry, barrier asymmetry, stimuli asymmetry, awareness asymmetry, service asymmetry and vision asymmetry.

Via literature study, observable indicators of all characteristics are collected. Via interviews, each of the stakeholders had to indicate to what extent they thought that each observable

indicator was important on a 5-points scale. Both the mean score and the coefficient of variation is determined for each indicator separately and for each stakeholder group individually. LSH was asked the same. The first part of the analysis was to identify which indicators were most important for each of the characteristics. This is done for all stakeholders individually, and additionally for the indicators of LSH. By comparing the scores of LSH with the scores of the stakeholders, and by comparing the scores of the different stakeholders, the degree of the asymmetry problems could be determined.

The second step of the theoretical framework is to decrease those asymmetry problems, in order to align the services of LSH to the needs and wishes of the stakeholders, and to align the goals of the stakeholders with those of LSH in order to improve the level of commitment of the stakeholders towards the innovation program. There are several ways in which the asymmetry problems between LSH and the stakeholders could be decreased. The actions that should be taken by LSH can be divided into three groups. First, LSH has to be aware of the needs and wishes of each stakeholder group. In that way, the services of LSH can support the stakeholders in improving their activities. Without knowledge about the characteristics of the stakeholders, it is possible that the services of LSH are not in line with the needs of the stakeholders, what could lead to a lack of use of the services by the stakeholders. Suggestions to maintain the awareness of the needs of stakeholders is by communicating with them and by giving them the opportunity to tell their needs to LSH.

The second step that should be taken is to act upon the needs of the stakeholders by means of adjusting the services of LSH to the needs of the stakeholders. This can be achieved by providing useful information needed by the stakeholders, but also by functioning as lobby between stakeholders and third parties. An example is to function as mediator between SME's and the government by searching for solutions for subsidy problems.

Finally, LSH should increase the awareness of stakeholders about the innovation program and the possibility for stakeholders to make use of the innovation program. Without stakeholders knowing about the innovation program, they cannot make use of it, and LSH is then not able to improve the innovation processes of these stakeholders. Additionally, the innovation and investment climate of the Dutch life sciences and health sector cannot be improved. Awareness of stakeholders of the innovation program can best be achieved by personal contact with stakeholders. Furthermore, the website of LSH should be more user-focused.

By taking these three steps, the asymmetry problems between LSH and the stakeholders can be decreased. When the goals and perceptions of both LSH and the stakeholders are in line with each other, the level of trust and commitment towards each other will increase. Furthermore, the services of LSH will better be aligned with the needs of stakeholders.

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## 1. INTRODUCTION

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In March 2005, the European Council relaunched the Lisbon Strategy in order to stimulate growth and employment in Europe [1]. The aim of the Lisbon Strategy is *'to become the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment'* [2]. Special focus is on R&D. Every country in the European Union must spend at least 3% of the Gross Domestic Product (GDP) on R&D, of which 1/3 is public expenditure and 2/3 is invested by the private sector [1]. In the Netherlands, this private investment should have been 17 billion euro. The Netherlands invested only half of this amount [3].

The Netherlands wants to belong to the economic top of Europe and must therefore grow towards an innovative and competitive economy, but the labor costs of the Netherlands are relatively high, compared to newly joined Member States and upcoming industrialized countries, like China [4]. As a result, the Netherlands has to put its focus on a knowledge based economy, in order to create competitive advantages. Innovation is getting more important to achieve this goal. In knowledge-intensive economies, innovation is driven by the interaction of producers and users in the exchange of both codified and tacit knowledge [5]. Knowledge distribution between actors through formal and informal networks is essential for economic performance [5]. Innovation is more and more seen as a result of interactive learning and exchanging knowledge between different actors in an innovation system [6, 7].

The Ministry of Economic Affairs has appointed eight innovation programs to create a network of large companies, SME's and knowledge institutes within a specific sector, in which interaction and innovation is stimulated [8]. One of these innovation programs is 'Life Sciences and Health', initiated in April, 2008 [9]. Several opportunities in this life sciences and health sector are not explored yet, like the expansion of internationalization of the sector and the valorization of fundamental knowledge into economic and societal valuable products [10-12]. Different problems have been identified that hinder the achievement of these goals, like the ability of SME's to form networks and find the right collaboration partner and (technological) knowledge, too little synergy between universities and business partners, and the fragmentation of the sector because of regional innovation programs that hamper an international appearance of the sector towards foreign companies [10, 11, 13-15].

The aim of the innovation program is to explore these opportunities and thereby to reduce the time of valorization of fundamental knowledge into socio-economic benefits, and improve the innovation and investment climate of the Dutch life science sector [16]. The innovation program will be executed by the organization 'Life Sciences & Health' (LSH). By removing the hurdles of the life sciences and health sector, LSH tries to stimulate the innovativeness and profits of the organizations in this sector, and to improve the healthcare of patients.

## 1.1 NEED FOR A NATIONAL INNOVATION PROGRAM

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Different stakeholders are involved in the innovation program. LSH provides various facilities and services to support entrepreneurs, researchers and supporting organizations in the Dutch life sciences and health sector. All of those stakeholders have other needs and wishes to improve the success of their organization. According to the unexploited opportunities in the life sciences and health sector mentioned before, the demand for a governing body to support and guide the entire sector is rising. The execution of the program needs cooperation of all the stakeholders and commitment to the program in order to make it successful [17]. LSH has the aim to support all types of stakeholders of the life sciences and health sector and to create a union of them. By exploiting those unexploited opportunities, and thus by stimulating international collaboration and supporting the valorization of fundamental knowledge, LSH tries to improve the innovation and investment climate of the Netherlands.

Acknowledgement: In this research, a distinction must be made between the innovation program 'Life Sciences & Health' and the organization 'Life Sciences & Health'. The innovation program 'Life Sciences & Health' comprehends the action lines of the government to support the life sciences and health sector. The organization 'Life Sciences & Health' is the executor of the innovation program. In this research, the innovation program will be reported as 'Life Sciences & Health'; the organization will be reported as 'LSH'.

## 2. PROBLEM DEFINITION

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LSH is an intermediary organization that provides services towards various stakeholders in order to improve their innovation processes. The aim of providing these services is to improve the innovation and investment climate of the Dutch life science sector and to accelerate the valorization of fundamental knowledge into socio-economic benefits [9]. According to principal-agent theory, principals are actors who do not possess all the appropriate resources to achieve their goals and therefore transfer resources towards agents with the necessary skills to perform the interests of the principal [18]. LSH can be seen as a principal; it does not possess the resources to fulfill these goals on its own and transfers resources towards stakeholders by means of services in order to achieve its goals. According to LSH, the stakeholders involved in the innovation program are pharmaceutical SME's, the government, large pharmaceutical companies (domestic as well as foreign), universities and research centers, technology transfer offices, valorization organizations, top institutes, investors (domestic as well as foreign), patient's associations, executive organizations and friendly foreign 'competitors' (foreign innovation programs with comparable problems) [19].

The stakeholders of LSH that are involved in the innovation program have to collaborate and interact with LSH when they make use of the services of LSH. When the goals and perceptions of LSH are not in line with the characteristics of the stakeholders, a difference in congruence between them will come in existence [17, 20]. The danger of a difference in congruence is that the stakeholders will act on behalf of their own interests in stead of those of LSH [21]. Therefore, it is needed to create congruence in goals and perceptions between LSH and its stakeholders in order to increase the commitment of stakeholders to the services of LSH [17, 22]. LSH needs the commitment of stakeholders in order to make sure that the stakeholders will act in the advantage of LSH [23].

Many problems in innovation processes occur because of failure in communication between actors [22]. Communication is needed to create trust between and commitment of stakeholders, to improve clarity between them to create congruence, to exchange and use knowledge, to resolve conflicts, etc. [22, 24]. The problem is that the differences in congruence between LSH and each of its stakeholders are not identified and that the means to diminish the differences are not clear. These differences in congruence must be identified and the communication strategy of LSH towards each of its stakeholders must be improved in order to align the goals of LSH and each of the stakeholders and align the services of LSH towards the needs and wishes of the stakeholders. This alignment should contribute to a decline in differences in congruence in goals and perceptions and thereby to an increased commitment of stakeholders towards LSH.

## 2.1 AIM OF THE RESEARCH

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The overall aim of this research is to contribute to the success of the innovation program Life Science & Health executed by LSH by improving the alignment of the services of LSH towards each of its stakeholders. The focus of this research is on three stakeholders, namely small and medium enterprises, technology transfer offices and regional initiatives. In chapter 6, the selection of and the stakeholders themselves will extensively be discussed.

Since innovation is more and more seen as an interaction between different actors instead of a linear process, the need for intermediaries has increased [25]. The role of knowledge-intensive business services (KIBS) as intermediaries is acknowledged and the importance of services has increased [26]. KIBS are intermediary organizations that provide services to simplify the exchange of knowledge and resources between stakeholders [27, 28]. Since LSH is a provider of services to improve the innovation climate of the Dutch life sciences, LSH can be seen as a KIBS [9, 29]. In order to improve the achievement of the goals of the innovation program, the services provided by LSH have to be improved.

Another assumption of an innovation network instead of a linear innovation process is the need for collaboration [22]. According to the principal-agent theory, commitment of actors is important to increase the gains created by collaboration and interaction [22, 24]. Commitment can be created by common goals and incentives between stakeholders and shared self-interests [22]. To improve the success of the innovation program Life Sciences & Health, another aim of this research is therefore to reduce the differences in congruence of goals and perceptions between LSH and its stakeholders. The quality of the services of LSH is a result of the joint effort of LSH and its stakeholders [30]. Besides that, an improved communication strategy will bring the needs and wishes of the stakeholders in better conformity with those of LSH [21]. This would contribute to a strengthening of commitment of stakeholders to the innovation program and to a decline of shirking of stakeholders, which is needed to make the innovation program a success. Shirking stakeholders act on behalf of their own interests when the principal has not enough resources to monitor the actions of the principal to prevent shirking [18].

In this research, the theory of KIBS and the principal-agent theory will be combined to identify asymmetries between LSH and each of its stakeholders that cause differences in congruence and a lack of commitment of stakeholders, and to provide insight into how to diminish these asymmetries. In this way, recommendations for the improvement of the services of LSH towards each of its stakeholders can be formulated.

## 2.2 RELEVANCE OF THE RESEARCH

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The outcome of this research can be divided into direct and indirect effects. The direct effect is that the alignment of services provided by LSH may be improved as well as the commitment of stakeholders towards the innovation program. The indirect effect is that the achievement of the

goals of LSH may be improved because of that. This will result in the improvement of the valorization of scientific knowledge into economic and societal benefits and the innovation and investment climate of the Dutch life science sector.

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### 2.2.1 SCIENTIFIC AND SOCIETAL RELEVANCE

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The innovation program aims to reduce the time needed for product development and bringing concepts successfully to markets and patients [16]. Because of the increasingly ageing population in western populations, the demand for new medical products and technologies will increase. Besides that, the possibilities of cost reduction in the health care will gain more attention [31]. This would directly lead to benefits for patients and an improved quality of life [8]. Since this research has the aim to contribute to the achievements of LSH, this research should also contribute to further improvement of the Dutch health care in order to meet patients' needs.

On the other hand, the innovation program has the aim to stimulate the innovation and investment climate and to duplicate the number of SME's and the returns of investments in the life science sector. The employment in this sector will then grow and economic growth will indirectly ascertain societal benefits.

The scientific relevance of this research is that it will contribute to the current scientific literature on KIBS and communication and on the principal-agent relationship and communication. In the past, scientific articles are written about, among other things, the relationship between venture capitalists and start-ups and the communication between them [32]. However, the specific application of communication strategies towards services of intermediaries derived from national innovation programs and the reduction of differences in congruence between those intermediaries and their stakeholders by communication has not been discussed yet. By combining the services of KIBS and the differences in congruence between stakeholders with communication strategies, the scientific literature is also expanded towards a practical use of theory.

Innovation is increasingly seen as an interactive process between stakeholders instead of a linear process [29] and services do matter in knowledge-based economies, based on, among others, the life science sector [28]. The use of KIBS has a decisive role in sectors where creation and diffusion of knowledge is important [29], and the need for their presence in innovation processes is more and more acknowledged [33]. The expansion of insight into the role of KIBS is therefore desired.

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### 2.2.2 RELEVANCE TO SCIENCE AND INNOVATION MANAGEMENT

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The starting point for research within the master Science and Innovation Management is that innovation takes place during interactions of actors producing, diffusing or using technologies.

The innovation process is seen as a complicated process with different actors involved and interactions between those actors with a special role for the government. This research tries to identify ways to create consensus between different actors with a special role for the government, functioning as the initiator of the innovation program 'Life Sciences & Health'. Between actors, interaction occurs to share and exchange knowledge [22]. All actors involved in the innovation program have to collaborate and interact in order to achieve the goals of LSH and the Dutch government. This research is thus in line with the basis for research of the Innovation Studies Group [34].

This research falls in the track 'Medical Biotechnology', since the research focuses on the improvement of the Dutch life science and health sector. This sector makes use of biotechnology with the aim to improve health and wealth in the Netherlands [9].

### 3. RESEARCH QUESTIONS

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Interaction and communication between KIBS and stakeholders improves the quality of services provided by the KIBS [28]. Failure in collaboration often stems from differences in congruence between stakeholders [17, 23]. Since LSH provides services to its stakeholders in order to exchange resources and to provide support, LSH can be seen as a knowledge-intensive business service. To achieve the goals of the innovation program, LSH should interact and communicate with its stakeholders in order to improve its services towards their stakeholders. How can LSH reach its stakeholders and how can LSH make sure that the stakeholders are committed to the innovation program?

In the past, collaboration within networks has failed because of a lack in commitment [3, 22]. Consequently, communication between LSH and stakeholders is needed in order to gain commitment of stakeholders in order to make a contribution to the innovation program. Only when all involved stakeholders contribute to the program, the program has a chance of success.

#### 3.1 MAIN RESEARCH QUESTION

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The innovation program Life Sciences & Health has different goals to achieve and is executed by LSH. The question is how LSH, functioning as KIBS, should decrease differences in characteristics (like goals, perception of each other and types of services) between LSH and the stakeholders in order to improve the services of LSH towards those stakeholders? Those differences in characteristics are referred to asymmetry problems in this research. These will be explained and elaborated in chapter 4 and 5. To improve the achievement of the goals of LSH, the communication between LSH and its stakeholders should be monitored, identified and improved [28]. The main research question is to investigate how this should be done:

**MRQ:** *How can the organization 'Life Sciences and Health', functioning as a Knowledge Intensive Business Service in a principal-agent relationship with its stakeholders, decline the differences in asymmetry problems with the stakeholders in order to improve its services towards the stakeholders and to diminish the differences in congruence between them and strengthen the commitment of the stakeholders towards the innovation program?*

#### 3.2 SUB-RESEARCH QUESTIONS

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To be able to answer the main research question, it will be divided into several sub-research questions.

*SRQ1: Who are the stakeholders involved in the innovation program and what are their organizational characteristics and service characteristics?*

*SRQ2: What are the organizational characteristics and service characteristics of LSH?*

*SRQ3: What are the similarities and differences in organizational and services characteristics between LSH and its stakeholders?*

*SRQ4: What are the similarities and differences in organizational and services characteristics between different stakeholders?*

*SRQ5: How can the differences in characteristics between LSH and its stakeholders be overcome in order to reduce their asymmetry problems?*

*SQR6: How can the differences in characteristics between different stakeholders be overcome in order to reduce their asymmetry problems?*

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### 3.3 OUTLINE OF THE RESEARCH

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The main research question and sub research question will be answered in this research. Chapter 4 will present the theoretical framework that is needed to answer the research questions. In chapter 5, the concepts of the theoretical framework are explained and discussed. The methodology is presented in chapter 6. In this chapter, the case selection, the data collection and the data analysis is discussed. The first part of the first sub research question is answered in this chapter. The results are presented in chapter 7. The second part of sub research question 1 and sub research question 2 are answered in section 7.1. In section 7.2, sub research questions 3 and 4 are discussed. Sub research question 3 is answered in section 7.2.1, sub research question 4 in section 7.2.2. Chapter 8 gives the answer to sub research question 5 and 6. In this chapter, suggestions are given in order to decrease the differences between LSH and the stakeholders and between different stakeholders. Chapter 9 presents the conclusion. The main research question is addressed here. Finally, chapter 10 presents the discussion of the research.

## 4. THEORETICAL FRAMEWORK

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In order to be able to answer the research question, a theoretical framework will be developed as a guideline for the research. This theoretical framework should make it possible to identify the asymmetry problems between LSH and the stakeholders. The differences in congruence between the characteristics of LSH and its stakeholders must be made clear. In that way, the characteristics of both LSH and the stakeholders can be aligned, in order to contribute to an improved quality of services and to a decline of difference in congruence [22, 30]. Differences in congruence of characteristics of LSH and its stakeholders lead to asymmetry problems between LSH and its stakeholders, and between different stakeholders, which should be avoided and decreased.

The theoretical framework presented here will describe the dynamics of asymmetry problems that are caused by a difference in congruence in characteristics between LSH and its stakeholders and by a difference in services provided by LSH and the need of stakeholders for these services [17, 28]. The combined theoretical framework is a combination of the theories of Knowledge Intensive Business Services and principal-agent relationships. The concepts of both theories will be elaborated shortly in the following two sections, followed by the combined theoretical framework in section 4.3.

### 4.1 THEORY OF KNOWLEDGE INTENSIVE BUSINESS SERVICES

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Knowledge-intensive business services provide services based on professional knowledge [27]. Studies on innovation have pointed out that KIBS contribute to sectoral growth through knowledge creation and exchange with local actors [35]. KIBS have several functions in stimulating innovations: they serve as facilitators of innovation when they support an organization in the innovation process; they serve as carriers of innovation when they aid in transferring existing knowledge among or within organizations, industries or networks; and they serve as a sources of innovation when they play a role in initiating and developing innovation activities in client organizations [28, 35, 36]. KIBS are not only the transmitters of specific information, but are also a key player in coordinating the tacit knowledges of their clients to increase the use of each others knowledge and to encourage collaboration.

KIBS are defined in different ways, but all definitions are based on knowledge. The definition used in this research is the one of Den Hertog (2000. pp. 505), where KIBS are seen as business units that *'rely heavily on professional knowledge, i.e. knowledge or expertise related to a specific (technical) discipline or (technical) functional-domain to supply intermediate products and services that are knowledge based'*. In this definition the intermediate function of the business service is taken into account. Besides that, it becomes clear that KIBS are focused on a

specific (technical) domain. In this case, LSH is a mediator of knowledge in the field of medical biotechnology. Furthermore, the definition shows that KIBS supply knowledge-based intermediate products and services. This means that the services that the KIBS will provide are services that will decrease the knowledge gap between stakeholders. This is in line with the aim of LSH. The aim of the use of the theory of KIBS is to understand how the services provided by KIBS are influenced by other factors and what type of services is provided by LSH.

The theory of KIBS gives an overview of the roles that KIBS play in providing services, and the services that KIBS provide to bridge the gap in knowledge between the KIBS and its stakeholders and to fulfill the needs for knowledge and resources of the stakeholders [28]. By providing services to the stakeholders, LSH can meet the needs of the stakeholders. This will contribute to an improvement of the achievements of the innovation program. The services that can be provided by KIBS are diversified. Examples of services are financial support, articulation of needs of users, building linkages with the external knowledge system, facility management services, training, labor recruitment services, legal services, etc [28, 37].

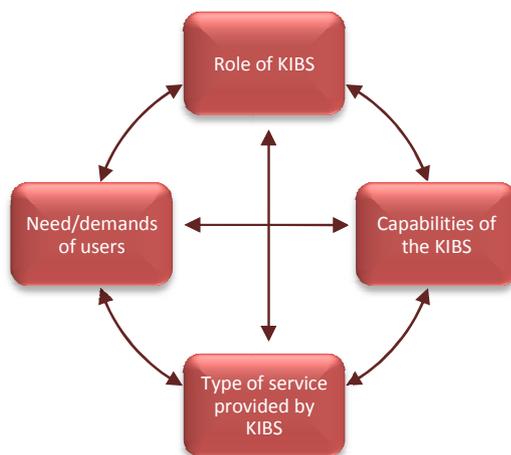


FIGURE 1 CONCEPTUAL MODEL OF THE THEORY OF KIBS

The services that a KIBS provides depend on several factors. First, KIBS play different roles in innovation processes and cover a wide range of services [28]. They can play a role in the diffusion of transfer of technologies, they can function as brokers and nodes in networks, create innovative solutions to stimulate learning processes of stakeholders, they can function as facilitators in complex processes, etc. [28, 38, 39]. The type of services provided by a KIBS depends on the role the KIBS plays in the innovation process [26, 28]. Furthermore, the role of a KIBS is determined by the need for services of stakeholders. Each stakeholder has different needs and KIBS respond to the wishes and needs articulated by the users of the services [28, 37]. Therefore, not only the role of the KIBS depends on the needs of the users for services, but also the type of services provided by the KIBS is influenced by the specific need of users. Finally, the KIBS should have the ability and capacity to act upon the needs and wishes of the users. The

role that a KIBS can adopt must be achievable [28]. The interaction between the need for services, the type of services, the role of the KIBS and the capabilities of the KIBS is summarized in Figure 1. Each of the concepts of this figure will be discussed briefly in the following sections.

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#### 4.1.1 NEEDS OF USERS

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KIBS are intermediaries that help to bridge the gap between (technological) opportunities and users needs [37]. To be able to provide bridging services, the need of users should be well articulated. LSH has to function as an intermediary to provide services to improve the success of the innovation program and to support the stakeholders with their innovation processes. Therefore, it is important to know what the wishes and needs of each of its stakeholders are to be able to react to them and to support the stakeholders with services they need. It is important to understand that each stakeholder will have different needs for services. Because of that, the needs of each stakeholder separately should be investigated to be able to serve them as good as possible [40].

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#### 4.1.2 ROLE OF KIBS

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KIBS cover a wide range of functions. For each service it provides, the KIBS has the aim to serve their clients in order to achieve their goals and to contribute to the strengthening of the firm's competitive performance [41]. The range of users that can be served by KIBS is wide. Therefore the KIBS should be able to respond to different needs and goals of users. The roles they fulfill are therefore diversified [37]. Den Hertog (2000) and Toivonen (2004) classify them in facilitators, carriers and sources of innovation. In this classification, the focus is on the improvement of innovation, which is the aim of LSH. Therefore, this classification is in line with the research. In this classification, KIBS can function as facilitator if it *'supports a client firm in its innovation process, but the innovation at hand does not originate from this KIBS firm nor is it transferred (from other firms) by this KIBS firm to the client firm'* (Den Hertog, 2000, pp. 507). Carriers of innovation are seen as KIBS that *'play a role in transferring existing innovations from one firm or industry to the client firm or industry even though the innovation in question does not originate from this particular KIBS firm'* (Den Hertog, 2000, pp. 507-508). KIBS are sources of innovation if it *'plays a major role in initiating and developing innovations in client firms, usually in close interaction with the client firm'* (Den Hertog, 2000, pp. 508).

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#### 4.1.3 TYPE OF SERVICE PROVIDED BY KIBS

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KIBS can deliver a wide range of services [37]. The services they provide depend on several factors. First, the type of service is conditional upon the needs and goals of the users. The service must adjoin the needs and demands of the users. The services can be seen as bridging activities provided by the KIBS that users need to fulfill their needs [37]. KIBS provide services that are highly integrated in a knowledge creation and knowledge diffusion network, whereby

interaction with the supplier of the service and the user of the service is of high importance [25]. They use information from outside the company and transform this into services useful for their users.

Services that can be provided by KIBS are for instance training, a benchmark research, advertisement campaigns, written reports, diagnosis, instructions for the client employees, introduction to new networks, providing information on performance of competitors, locating key sources of knowledge, articulation of specific needs of users, etc. [28, 37].

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#### 4.1.4 CAPABILITIES OF THE KIBS

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The capabilities of the KIBS refer to the internal organization arrangements of the KIBS that have to be managed in order to be able to fulfill the needs and demands of the users [36]. The need for new services may require new skills of employees or new organizational forms [28]. In absence of these necessary capabilities of KIBS, the KIBS cannot perform specific roles and cannot provide certain services to comply with the needs of the users. Therefore, the capabilities of the KIBS must be known in order to understand if the KIBS is able to achieve the goals of the users by providing the right services.

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## 4.2 THEORY OF PRINCIPAL-AGENT RELATION

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The second theory that will be used in this research is the theory of the principal-agent relation. Collaboration between stakeholders often fails because of differences in goals, trust and congruence [22, 24]. Principal-agent theory explains how differences in goals between the principal and the agent can lead to a dysfunctional relationship between them [18, 20]. The aim of the research is to decrease the differences in characteristics between LSH and its stakeholders in order to create congruence between them. The principal-agent theory can be used to identify those differences and to identify the problems caused by these differences [17, 20]. Therefore this theory is used in this research. Figure 2 shows the conceptual model of the theory of the principal-agent relation. In this model, the causes of asymmetry problems between the principal and the agent are shown.

Asymmetry problems arise when there are differences between the organizational characteristics of the principal and the organizational characteristics of the agents. In this case, the principal is LSH and the agents are the stakeholders of LSH.

With science policy, the government supports specific scientific domains in order to achieve socio-economic benefits [23]. The government itself often does not have the resources to perform the activities, but allocates resources to agents that possess these skills [23]. These agents have to perform the task of the principal, because the principal is not able to do so by itself [42]. The principal should motivate the agent in the best way to increase the chance that the agent will accomplish the task as the principal would prefer [42]. Often, compliance with the

tasks of the principal cannot be maximized by the agents because the goals of the agents are not in line with the goals of the principal and they want to fulfill other objectives [17]. To identify whether the organizational characteristics of the stakeholders, like their goal objectives and self-interest, are in line with the organizational characteristics of LSH, these characteristics of both the stakeholder groups and LSH must be described and compared. In that way, problems caused by differences in organizational characteristics can be identified, which can lead to a solution for these problems by aligning differences [20]. Each of those concepts will briefly be discussed in the following sections.

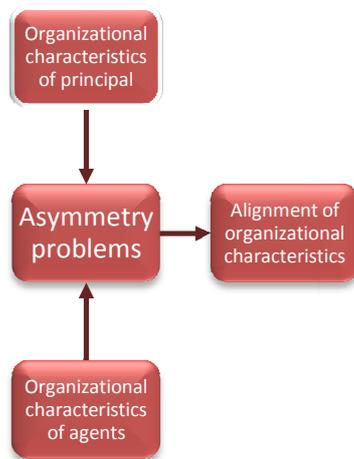


FIGURE 2 CONCEPTUAL MODEL OF PRINCIPAL AGENT THEORY

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#### 4.2.1 ORGANIZATIONAL CHARACTERISTICS

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Asymmetries in the relationship between principal and agent are seen as the major problem of why the collaboration between principal and agent is not functioning optimal and why the commitment of stakeholders towards the principal is not perfect [20]. The first problem arises because of differences in goal orientation between principal and agent. The goals of the principals are often not completely in line with the goals of the agents. The principal wants the agent to execute and fulfill the objectives of the innovation program. The agents often have the objective to increase profits. Both principal and agent will therefore strive for personal success [21]. The agent is self-interested and tries to maximize its personal welfare without taking into account the welfare of the principal. The agent can perform several actions in order to increase the achievement of its own goals by acting irresponsible, by not using all resources gained by the principal or by not delivering all resources as agreed [17, 18, 21]. These actions of the agents will decline their commitment towards the principal and the trust between principal and agent will decrease [43]. Commitment of actors in a relationship binds them, which strengthens the relationship [43]. Shared goals create a long-term orientation towards the relationship in which

the agents are less self-interested, or where self-interest of the agent is not harmful for the principal [44].

The second organizational characteristic is the information of the principal about its agents. Different agents have different competences to perform tasks given by the principal to achieve a certain goal. The problem is that the principal does not always know what these competences are and what the intentions of the agent are. Monitoring the agent to identify them is often expensive [20]. Besides that, the principal must be aware of the goals of the agent, to be able to react to them and to align them to the goals of the principal [43]. To select the agent that can accomplish the goal of the principal, the principal must be aware of the competences and intentions of all agents that are considered to be a potential partner of the principal [42]. The incentives of the agent should be structured in a way that the agent takes actions in the best interest of the principal. Knowledge about the competences and intentions of the agents makes this possible [45]. Furthermore, if agent and principal know each other better, the level of trust and commitment towards each other will increase. The behavior is predictable because they know how the other will act in certain situations, what will decrease the risks for the principal [43].

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#### 4.2.2 ASYMMETRY PROBLEMS

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When principal and agents differ in goal orientation, the agent is self-oriented or the principal is not able to monitor the competences and intentions of the agent, asymmetry problems arise that disadvantage the principal [17]. Before these problems can be solved, the reason for these problems must be identified. This can be done by identifying differences in organizational characteristics. These differences can lead to different asymmetry problems. Originally, two principal-agent problems were identified; moral hazard and adverse selection [20]. Moral hazard means that the agents have their own interests that are not in line with the interests of the principal. They will therefore do what is best for them and will only perform the goals of the principal if they are aligned with their own interests [21]. Adverse selection arises when the agent has more information about the project than the principal, what is a disadvantage for the principal [21]. The principal is not completely aware of the competences and abilities of the agents to find the best suited agent to fulfill the goals of the principal. Besides that, the agent can shirk and perform less than the principal expects him to do [18]. Both asymmetry problems decline the level of trust and commitment of agents towards the principal. Therefore, alignment of the problems is needed to increase the commitment and to contribute to achieving the goals of the principal. In this case, it means that the organizational characteristics of LSH and its stakeholders must be aligned in order to decline the differences between them and to reduce the asymmetry problems.

### 4.3 COMBINED THEORETICAL FRAMEWORK

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In this section, the theories of KIBS and principal-agent relations are combined and extended with the concept 'declining asymmetry problems'. This concept is used to determine how the asymmetry problems can be diminished. Figure 3 presents the conceptual model of this combined theoretical framework.



FIGURE 3 CONCEPTUAL MODEL OF THE COMBINED THEORETICAL FRAMEWORK

Differences in congruence create asymmetry problems [17, 20]. The principal-agent theory has indicated that those asymmetries arise because of differences in organizational characteristics. The theory of KIBS has shown that the need for services must be in line with the services provided by the KIBS. Since LSH is functioning as a KIBS and provides services to its stakeholders, both statements will be combined in this theoretical framework. Therefore, the characteristics of LSH and its stakeholders incorporate both organizational and service characteristics. Differences between them lead to asymmetry problems. In this section, the characteristics of LSH and its stakeholders will be discussed, as well as the asymmetry problems that arise because of differences between them. The stakeholders of which the characteristics will be identified in this research are the small and medium enterprises, technology transfer offices and regional initiatives, as mentioned in section 2.1.

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#### 4.3.1 CHARACTERISTICS OF LSH AND ITS STAKEHOLDERS

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In the principal-agent theory, the organizational characteristics of LSH were discussed. Because LSH is a KIBS, not only the organizational characteristics are important, but also the alignment of services with the needs of stakeholders. Therefore, another concept is added to the characteristics of LSH and its stakeholders; the service characteristics. Both the organizational and service characteristics are divided in several dimensions. Organizational characteristics incorporate the goals, barriers and stimuli of the organization, the perceptions towards the

other organization and the awareness of the organizational characteristic of its stakeholder(s). The service characteristics are measured differently for LSH and for the stakeholders. For LSH, the types of services it provides will be indicated, according to the theory of the KIBS. For its stakeholders, the needs for a certain service will be measured [22]. This classification is made, because adoption of the services by stakeholders depends both on the need for services by stakeholders and the ability of LSH to provide the services needed by stakeholders. Adoption of the services is important, because this is needed to let stakeholders make use of them. The characteristics of both LSH and the stakeholders will be further explained and discussed in chapter 5.

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#### 4.3.2 ASYMMETRY PROBLEMS

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The characteristics of LSH and its stakeholders will be compared in order to identify asymmetry problems. Since there are different characteristics with different dimensions, they are the cause of a wide range of asymmetry problems. Differences in characteristics lead to asymmetry problems [17, 20]. Larger differences cause larger problems [23]. Therefore, the differences in characteristics are measured for each characteristic individually, which lead to asymmetry problems that can be related to the characteristics of LSH and the stakeholders. This means that the asymmetry problems used in this research are divided according to the characteristics of LSH and the stakeholders. For each characteristic mentioned in section 4.3.1, an asymmetry problem can be linked to it, in order to be able to identify differences between LSH and the stakeholders and between different stakeholders. Therefore, the asymmetry problems dealt with in this research are: goal asymmetry, perception asymmetry, barrier asymmetry, stimuli asymmetry, awareness asymmetry, vision asymmetry, service asymmetry and service compatibility. The operationalization of these asymmetries will be discussed in chapter 5.

There are three asymmetry problems that will be measured between LSH and each of the stakeholders, and six asymmetry problems that will be measured between different stakeholders. The asymmetry problems between LSH and the stakeholders are the goal asymmetry, the perception asymmetry and the service compatibility. The goal asymmetry measures differences in goals between LSH and stakeholders, for each group of stakeholders individually. The perception asymmetry is measured by differences between the perception of LSH about the characteristics of each of the stakeholders mentioned in section 4.3.1 and the actual characteristics experienced by the stakeholders. These differences are measured for each group of stakeholders individually. Finally, the service compatibility measures the differences between the services provided by LSH towards each group of stakeholders, and the need for those services by each of the groups.

To be able to compare the characteristics of the stakeholders between different stakeholder groups, six asymmetry problems are measured between the stakeholder groups. The goal asymmetry measures differences between stakeholders in goals of the organizations, the

differences in barriers between stakeholders is measured by the barrier asymmetry. The same will be done for differences in stimulating factors by the stimuli asymmetry. With the awareness asymmetry, it will be identified whether there are differences in level of awareness of the innovation program between stakeholder groups. The vision asymmetry indicates how the stakeholders feel about the innovation program, and what their vision is of LSH. With this asymmetry problem, differences of that characteristic are measured. Finally, differences in need for services between stakeholders are measured by the services asymmetry.

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#### 4.3.2 DECLINING THE ASYMMETRY PROBLEMS

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Alignment of services will decline the asymmetry problems between LSH and its stakeholders. Furthermore, an alignment of services will have a positive effect on the alignment of the goals between LSH and its stakeholders and therefore an improvement of commitment of the stakeholders towards LSH. Both the alignment of services and the alignment of goals have the result that asymmetry problems between LSH and each of its stakeholders will diminish, since these asymmetry problems exist of differences in goals and differences in needs for services and the actual services delivered by LSH.

The aim of this research is therefore to decline the asymmetry problems. For each asymmetry problem, the cause of the asymmetry will be identified. Furthermore, possible solutions will be provided in order to decrease the differences in characteristics between LSH and the stakeholders and between different stakeholders. Examples of solutions are suggestions to change the services of LSH or to focus on one service more than on other services or suggestions of new types of services. Besides focusing on the services to decrease the differences, a communication advise can be given to LSH. Asymmetry problems increase the need for communication, since communication contributes to a better perception about each other [22, 24]. Communication is a positive impulse for the alignment of services since communication with stakeholders can clarify the needs of stakeholders [30]. As a result, the services of LSH can be implemented in such a way that they will fulfill these needs of stakeholders. Communication between LSH and the stakeholders is one possible way of trying to change the beliefs, needs and demands of the other [43]. Communication is a manner of achieving goals when the principal knows what it wants to achieve and communication is used to bring the agent to the point where it complies with it [43]. By communicating, the stakeholders can be made aware of the services provided by LSH, and communication can contribute to a decline in differences between LSH and each of its stakeholders. Therefore, communication advice can be a possible suggestion for declining the asymmetry problems.

In the principal agent theory, the differences in personal characteristics are described, as well as the resulting asymmetry because of these differences. What is not described in this theory is how the principal can act to diminish the differences. Only identifying the differences between principal and agent without the ability to decline the differences between them will not lead to

an improvement of commitment. The same applies for the theory of KIBS. Since this theory explains the dynamics between users, the KIBS and the services it provide, it helps identifying the concepts that influence the type of service it provides. The way how these services should be improved to align them to the needs of the stakeholders is not described by the theory.

## 5. OPERATIONALIZATION OF THE CONCEPTS

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The theoretical framework is the basis of this research to investigate what the asymmetry problems are between LSH and the stakeholders and between different stakeholders [17, 20]. To be able to decrease the asymmetry problems, the differences in congruence between the characteristics of LSH and stakeholders must become clear. Therefore, the concepts of the theoretical framework will be operationalized. The way wherein the concepts will be measured will be presented in this section. The operationalization is focused on the concept ‘asymmetry problems’. Asymmetry problems are caused by differences in organizational and services characteristics between LSH and its stakeholders, as presented in Figure 3. By identifying the differences in these characteristics between LSH and its stakeholders, the asymmetry problems can be measured.

To be able to measure those characteristics, the dimensions of each characteristic will be presented in order to be able to collect data and compare the dimensions of LSH with those of its stakeholders. In section 5.1, the asymmetry problems will be addressed. In section 5.2 the operationalization of the dimensions of the asymmetry problems will be discussed.

### 5.1 ASYMMETRY PROBLEMS

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Characteristics of LSH and stakeholders can be divided into several dimensions, as mentioned in section 4.3.1. Therefore, the asymmetry problems cover a wide range of problems, since asymmetry problems arise when there are differences in characteristics. In Table 1, a summary of all asymmetry problems is presented. The need for identification of each of the asymmetry problems will be discussed in this section.

TABLE 1 ASYMMETRY PROBLEMS

Concept	Dimension	Measurement
Asymmetry problems	Goal asymmetry	Differences in goals of LSH and goals of stakeholders and differences in goals between different stakeholders
	Perception asymmetry	Differences in perception of LSH towards the characteristics of stakeholders and the actual characteristics of stakeholders
	Service compatibility	Differences in service characteristics of stakeholders and services of LSH
	Barrier asymmetry	Differences in barriers between different stakeholders
	Stimuli asymmetry	Differences in stimulating factors between different stakeholders
	Awareness asymmetry	Differences in awareness of the stakeholders about the innovation program, LSH and its services

	Vision asymmetry	Differences in vision of stakeholders
	Service asymmetry	Differences in service characteristics between different stakeholders.

First, the differences in goals between LSH and its stakeholders should be identified. Goal conflicts arise when there are differences in preferences between LSH and its stakeholders [20]. Usually, actors are motivated by self-interest [46]. Each actor will try to gain maximum benefits. In case of differences in goals, the stakeholders will attempt to increase their personal benefits which will hinder collaboration with and commitment to LSH [17]. Alignment of goals is therefore important. The more overlap between the goals of LSH and its stakeholders, the more congruence will exist between them [23].

The second dimension is 'perception asymmetry'. To increase the congruence between LSH and its stakeholders, information about the stakeholders is needed [46]. This dimension measures whether the information that LSH possesses about the stakeholders corresponds to the actual situation that the stakeholders experience. If LSH possesses wrong or incomplete information about the characteristics of the stakeholders, it is difficult for LSH to provide services that fulfill the needs and wishes of the stakeholders [46]. In case of shared perceptions, LSH can count on more support of its stakeholders [23]. The perception of LSH of its stakeholders will be measured for both the service and organizational characteristics of the stakeholders. This means that the perception of LSH of the goals of the stakeholders, the awareness of the stakeholders, the barriers and the stimuli that stakeholders experience and the vision of stakeholders of the program and of LSH is measured. Furthermore, the perception of LSH about the need for services will be identified. These dimensions of characteristics will be elaborated below.

As mentioned before, LSH and each of the stakeholders all have their own goals. Perceptions about the goals of the stakeholders should be identified in order to be able to act upon those needs of the stakeholders [17]. LSH has the aim to anticipate to the goals of the stakeholders by simplifying the achievements of them. The services of LSH are aimed at the facilitating of the achievements of the goals of the stakeholders.

The barriers and stimuli of stakeholders can hamper or stimulate the stakeholders to fulfill their goals [47]. The services of LSH have the intention to strengthen the stimuli of the stakeholders and to reduce the barriers [9]. Imperfect information about these factors makes it difficult to align the services of LSH to the needs of the stakeholders [48]. The barriers and stimuli of stakeholders can be compared with LSH's perception of those factors to investigate whether LSH implements the right services that are equal to the needs of the stakeholders.

LSH provides services in order to improve the innovation processes of stakeholders and to improve the innovation and investment climate of the Dutch life sciences and health sector. In order to achieve this goal, stakeholders must participate in the program and make use of the

services. Awareness of the innovation program and of the services of LSH is therefore important. All types of stakeholders must be attracted to the program [49]. Stakeholders can have different preferences of how they want to be informed by LSH about the innovation program and the services. To be able to anticipate to these preferences, it is important to understand what these preferences are and how they differ from the perception of LSH about those preferences.

Information about the stakeholders is needed to align the services of LSH with the needs of the stakeholders. The level of information that LSH possesses about the stakeholders is measured by their perception of the stakeholders' characteristics. Oppositely, stakeholders possess information about LSH that can be correct or incorrect. As mentioned before, stakeholders will support the innovation program better when they share perceptions with LSH [23]. The vision of stakeholders measures their perception of the innovation program and the intentions of LSH in order to identify whether the stakeholders possess imperfect information about LSH [20]. This is important to investigate because differences in intentions will lead to conflicts and a reduced support of the stakeholders [20]. Therefore, the perception of LSH about the vision of the stakeholder about the intentions of LSH is measured, to investigate the correctness of the vision of the stakeholders. A wrong vision about the intention of LSH will have negative effects on the participation of the stakeholders in the innovation program.

Finally, the perceptions of LSH of the need for services of stakeholders will be identified. The need for services is important to understand, because it can prevent LSH from providing services which are not required by the stakeholders. Identification of this factor is important to understand, because it determines the level of adoption of the services by stakeholders, which is the aim of LSH.

The third asymmetry problem is 'service compatibility'. Compatibility of services is measured by the services provided by LSH and the needs of stakeholders for these services [50]. The services can be made more compatible to the needs and wishes of the stakeholders once the needs are known. This will also lead to an increased adoption of stakeholders.

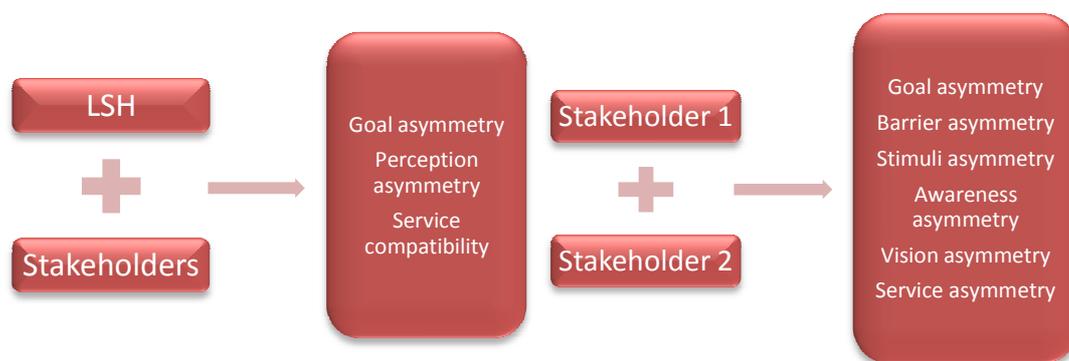


FIGURE 4 ASYMMETRY PROBLEMS BETWEEN LSH AND STAKEHOLDERS AND BETWEEN STAKEHOLDERS

The three asymmetry problems mentioned above indicate differences between LSH and its stakeholders. Other asymmetry problems that will be investigated are differences between stakeholders (Figure 4). This is done to identify differences in characteristics between different types of stakeholders so that LSH is able to anticipate to these differences. This will be done in six dimensions; goal asymmetry, barrier asymmetry, stimuli asymmetry, awareness asymmetry, vision asymmetry and service asymmetry. As indicated above, the organizational and service characteristics of stakeholders are important to identify. Different types of stakeholders will likely have different needs and wishes. LSH has the aim to facilitate the stakeholders by providing services. Those services must be aligned with the needs and wishes of the stakeholders in order to increase their utility [22]. By making distinction between the characteristics of different types of stakeholders, it is possible to align the services with the characteristics of each of the stakeholders independently.

The goal asymmetry is, besides measured by the differences between LSH and the stakeholders, measured by differences in goals between stakeholders. This is done to be able to discover differences between stakeholders in objectives and to detect differences in what they want to achieve. LSH can focus in this way on facilitating the goals of the stakeholders independently, and therefore inform the stakeholders more accurately. Stakeholders can be supported more precisely in this way.

Furthermore, the barrier asymmetry and stimuli asymmetry detect differences between stakeholders in the factors that hamper and stimulate the achievements of their goals. It is useful to separate those factors between different types of stakeholders, so that LSH is able to reduce the barriers of each type of the stakeholders more accurately and that stimuli of each type of stakeholder can be implemented appropriately to each of their needs and wishes. The services of LSH can then be specified and the amount of services can be arranged to each type of stakeholder.

Awareness can be created in different ways and at different frequencies. Awareness of stakeholders is needed in order to let them make use of the services of LSH. Without awareness of stakeholders, the stakeholders have no knowledge of the services and will therefore not be able to make use of them. It is useful to identify differences in awareness between stakeholders, because then the stakeholders can be informed about new information in the way they prefer, and stakeholders that are less aware than others can be given more attention.

Furthermore, it is not only important that the perception of LSH of the characteristics of the stakeholders is correct but this is also important the other way around. The vision asymmetry measures the perception of the stakeholders about the intentions of LSH and the perceptions of LSH about the usefulness of the innovation program. This is measured by three indicators; usefulness, threat and trust. The level of trust indicates whether the stakeholders have confidence in LSH and in the innovation program. Trust is defined as 'the firm's belief that the other company will perform actions that will result in positive outcomes for the firm, as well as

not take unexpected actions that would result in negative outcomes for the firm' [44]. By identifying the level of trust of stakeholders, the vision of the stakeholders with respect to the intentions of LSH can be measured. Trust is an important factor in relationships, because it creates stability and relational sustainability. The aim of LSH is to continue its services for a long time. Trust of stakeholders is therefore important [52]. Finally, it is measured whether the innovation program is a threat to the stakeholders. It is likely to assume that stakeholders will not make use of the innovation program when they see it as a threat. The level of trust, usefulness and threat determines the sustainability of the relation between LSH and its stakeholders, which is important for long-term relationships.

The final asymmetry problem is the services asymmetry. The need for services can differ between different types of stakeholders. LSH provides services for all of its stakeholders. The adoption of services depends on the compatibility of services with the need of stakeholders [22, 50]. Without use of services by stakeholders, LSH is unable to facilitate the goals of the stakeholders. Therefore, it is important to understand the need for services of stakeholders and the differences in those needs between stakeholders.

Table 1 shows a summary of the asymmetry problems and the way they are measured. Since asymmetry problems arise because of differences in organizational and service characteristics between LSH and stakeholders or among stakeholders, these organizational and service characteristics of both LSH and each of the stakeholders must be operationalized as well. In Table 2, the dimensions of each characteristic of the stakeholders are shown, as well as the indicators of each dimension and the way wherein they will be measured. The same is presented for LSH in Table 3. It summarizes the dimensions and the indicators that are needed to be able to identify the asymmetry problems as mentioned above. During the operationalization of the asymmetry problems, the operationalization of the characteristics will be further elaborated.

TABLE 2 SUMMARY OF MEASUREMENTS OF CHARACTERISTICS OF STAKEHOLDERS

Characteristic	Dimension	Indicator	Measurement	Score
Goals	Goals for now	List of goals	Importance	1 to 5
Barriers	Unachieved goals	List of goals	Achievement	1 to 5
	Problems that cause failure of goals	List of problems	Importance	1 to 5
	Factors that influence success of the organization	List of factors	Influences	1 to 5
Stimuli	Stimulating factors	List of stimulating factors	Importance	1 to 5
	Experienced factors	List of stimulating factors	Positive experience	1 to 5
Awareness	Communication tools	List of	Most important	1 = most

		communication tools	communication tool	important
	Preference for communication tool	List of communication tools	Preference	1 to 5
	Frequency of communication	List of frequencies	Most preferred frequency to communicate	1 = most important
Vision	Positive statements	List of statements	Agreement	1 to 5
	Negative statements	List of statements	Agreement	1 to 5
Services	Services needed by stakeholder	List of services	Importance	1 to 5

TABLE 3 SUMMARY OF MEASUREMENTS OF CHARACTERISTICS OF LSH

Characteristic	Dimension	Perception of dimensions of stakeholders	Indicator	Measurement	Score
Goals	Goals of LSH for now		List of goals	Importance	1 to 5
	Goals towards stakeholder		List of goals	Importance	1 to 5
Perception	Perception of goals	Goals for now	List of goals	Importance	1 to 5
	Perception of barriers	Unachieved goals	List of goals	Achievement	1 to 5
		Problems that cause failure of goals	List of problems	Importance	1 to 5
	Perception of stimuli	Factors that influence success of the organization	List of factors	Influence	1 to 5
		Positively experienced factors	List of factors	Positive experience	1 to 5
	Perception of awareness	Awareness	List of subjects to be aware of	Awareness	1 to 5
		Communication tools	List of communication tools	Top-three communication tools	1 to 3
		Preference for communication tool	List of communication tools	Preference	1 to 5
Frequency of		List of	Top-three	1 to 3	

		communication	frequencies	frequency	
	Perception of vision	Positive statements	List of positive statements	Agreement	1 to 5
		Negative statements	List of negative statements	Agreement	1 to 5
	Perception of need for services by stakeholders	Services needed by stakeholders	List of services	Importance	1 to 5
Services	Services of LSH		List of services	Importance	1 to 5
	Services towards stakeholders		List of services	Importance	1 to 5

As presented in Tables 2 and 3, stakeholders are involved in all of the asymmetry problems, in contrast with LSH. LSH is involved in only three asymmetry problems; the goal asymmetry, the perception asymmetry and the service compatibility. This means that the characteristics of the stakeholders differ from the characteristics of LSH.

## 5.2 OPERATIONALIZATION OF ASYMMETRY PROBLEMS

The previous section explained why the asymmetry problems are important to investigate. In this section, the operationalization of the characteristics of LSH and the stakeholders and the asymmetry problems will be discussed. Each asymmetry problem will be discussed separately. The characteristics needed to be able to measure the asymmetry will be operationalized for each asymmetry problem.

### 5.2.1 GOAL ASYMMETRY

First, the operationalization of goal asymmetry between LSH and its stakeholders will be discussed. To be able to measure this type of goal asymmetry, the goals of stakeholders must be compared with the goals of LSH. LSH is an organization that tries to support its stakeholders. Therefore, it is likely to assume that the goals of LSH will differ from the goals it has for its stakeholders. The first type of goals indicates the goals to improve LSH itself; the second type of goals indicates the goals to improve the success of the stakeholders. This is presented in column II respectively column III in TABLE 4. Each stakeholder, and LSH will be asked to describe the goals of the organization. LSH will additionally be asked what their goals are towards each type of the stakeholders. For each goal mentioned both LSH and the stakeholders must indicate on a 5-points scale the importance of the goal (5 represents 'totally important'). In this way, each goal

of each stakeholder and of LSH is indicated with a score from 1 to 5. Those scores can be compared with each other. Via literature study, a list of possible goals is made [10, 11, 13, 53, 54]. This list is shown in Table 4. Other goals mentioned by LSH or stakeholders that are not in this list can be added. For each goal of this list, the scores will be measured for each stakeholder group.

The first part of the goal asymmetry is measured by differences between LSH and its stakeholders. This will be measured in different ways. First, the differences in scores for the goals between LSH and its stakeholders will be identified. This means that column I and II will be compared. Those differences will be measured between LSH and all stakeholders together, and between LSH and each stakeholder independently. Furthermore, the differences between goals of the stakeholders and the goals of LSH towards the stakeholders are measured (column I and III) for each stakeholder individually.

The goals of Table 4 vary between LSH and the stakeholders. To be able to compare them, the goals that are related with each other will be compared. This means that the goal of LSH and the goals of the stakeholders have the same objectives, but the goals will be achieved in different ways. An example is the goal of LSH to mediate in linking highly qualified employees to the stakeholders and the goal of stakeholders to find highly qualified employees. LSH can contribute to the achievement of the goals of the stakeholders by achieving its own goals. The goals will be compared with each other are: 1.1 and 2.2, 1.6 and 2.3, 1.11 and 2.4, 1.14 and 2.3, 1.3 and 3.9, 1.4 and 3.8, 1.6 and 3.1, 1.6 and 3.10, 1.7 and 3.6, 1.7 and 3.7, 1.10 and 3.11, 1.11 and 3.2, 1.12 and 3.2, 1.14 and 3.11 and finally 1.16 and 3.2.

TABLE 4 GOALS OF STAKEHOLDERS AND LSH

	<b>I Goals of stakeholders</b>		<b>II Goals of LSH</b>		<b>III Goals of LSH towards stakeholders</b>
1.1	Growth	2.1	Become independent of the government	3.1	Find collaborating partner for stakeholder
1.2	Discover scientific breakthrough	2.2	Growth	3.2	Provide useful trainings for stakeholder
1.3	Patents	2.3	Create partnerships in sector	3.3	Investigate what the hurdles are for the stakeholder
1.4	Licenses	2.4	Create business awareness from students to top executives	3.4	Reduce animal testing
1.5	Bring product(s) to the market	2.5	Create unity in the sector	3.5	Provide facts, figures and useful links for stakeholder

1.6	Find collaborating partner	2.6	Attract big foreign pharmaceutical companies to the Netherlands	3.6	Attract top students to the Netherlands
1.7	Find (highly qualified) personnel	2.7	Make the Dutch life sciences and health sector a hotspot for investment	3.7	Mediate in linking high qualified employees to stakeholders
1.8	Transfer knowledge to industry/other organizations	2.8	Gain commitment from stakeholders	3.8	Simplify licensing of knowledge
1.9	Increase the use of knowledge created by the organization			3.9	Simplify patenting of knowledge
1.10	Move to foreign country			3.10	Increase number of collaborations between different stakeholders
1.11	Improve business skills			3.11	Provide international support to stakeholders
1.12	Improve academic skills				
1.13	Profitability				
1.14	Networking				
1.15	Create awareness of researchers for commercialization				
1.16	Improve industrial skills				
1.17	Funding				

Secondly, the differences among stakeholder groups will be identified. The scores that are given to each of the indicators of column I are measured for each group of stakeholders individually. The scores for each indicator will be compared between different stakeholder groups to be able to identify differences in goals between them.

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### 5.2.2 PERCEPTION ASYMMETRY

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The perception of LSH will be measured for each of the dimensions of the characteristics of the stakeholders separately, conform the dimensions in Table 2, and for each group of stakeholders separately. The list of indicators must be the same for each stakeholder to be able to do so [57]. The perception of LSH about the characteristics of stakeholders will be compared with the actual characteristics of stakeholders. This means that differences in perception and actual situation of

goals, barriers, supporters, awareness, vision and services between LSH and its stakeholders will be measured. Of each type of perception asymmetry will be indicated how this will be operationalized.

#### 5.2.2.1 Goal perception asymmetry

The goal perception asymmetry is measured by the difference in perception of LSH about the goals of stakeholders and the actual goals of stakeholders. The goals of the stakeholders were already operationalized for the goal asymmetry. Each indicator is scored from 1 to 5 for each stakeholder individually. A score of 1 indicates that the indicator is totally not important, a score of 5 relates to an indicator that is 'totally important'. To compare the goals with the perception of LSH about those goals, LSH will be asked to describe to what extent they think the goals are important for each of the stakeholders, on the same scale from 1 to 5. They have to do this for each stakeholder individually. In this way, the goals of the stakeholders and the perception of those goals by LSH are measured in the same way on the same scale. This enables the comparison of the goals. The differences between the goals of the stakeholders and the perception about these goals can be compared for each stakeholder group individually. As a result, the goal perception asymmetry can be measured.

#### 5.2.2.2 Barrier perception asymmetry

Barrier perception asymmetry is measured by the difference in perception of LSH of the barriers of stakeholders and the actual barriers that stakeholders have experienced. The stakeholders must indicate which factors hamper their innovation process and chances of success. The barriers of stakeholders are divided in two dimensions; the unachieved goals of the stakeholders and the causes of the inability of the organization to achieve those goals. The stakeholders will be asked to describe which goals they cannot achieve on a scale from 1 to 5. By literature study, a list of goals is obtained, as presented before in column I of Table 4. Goals that cannot be achieved which are not mentioned on this list can be added. LSH must indicate to what extent they think that those goals are not achieved by each of the stakeholders, on the same scale from 1 to 5. In this way, the differences between the achievement of the goals of the stakeholders and LSH's perception about this can be measured.

The second part of the barriers of the stakeholders will be indicated by asking the stakeholders what the causes are for the inability to achieve the goals. By literature study, a list of possible causes is identified, as shown in Table 5 [13, 47, 54]. Each stakeholder must indicate the importance of each indicator, on a scale from 1 to 5. Causes that are not on the list can be added. The same will be done for the perception of LSH about those causes. Each indicator must be scaled by a score from 1 to 5. Both LSH and the stakeholders have scored the indicators, which makes it possible to identify the asymmetry between them. By measuring both dimensions as described above, the barrier perception asymmetry can be measured.

TABLE 5 CAUSES OF THE INABILITY TO ACHIEVE THE GOALS

Problems that cause the inability to achieve the goals
A lack of financial resources
A shortage of networking capabilities
Not able to find the right collaboration partner
Lack of highly qualified employees
Lack of access to highly qualified employees
Lack of business skills
Not able to find service partner (legal, economic, marketing, etc)
Too less knowledge about business opportunities
Too less knowledge about research
Not the right technology
Not enough cooperation partners
A lack of continuity of financial flows
Not able to transfer knowledge to other organizations
Problems with patenting
Problems with licensing
Legislation problems
No access to scientific papers
No access to progress of competitors
No flexibility in using foreground IP
Stack of subsidies/grants

### 5.2.2.3 Stimuli perception asymmetry

The third asymmetry that is measured in the perception asymmetry is the stimuli perception asymmetry. First, the factors that stimulate stakeholders in their success will be measured. Each of the stakeholders must describe which factors would positively stimulate their organization in achieving their goals. To each mentioned factor, a score from 1 to 5 must be given in order to scale the positive influence of the factor on the success of the organization. In Table 6, a list of factors that possibly could stimulate organizations positively is obtained by literature study [37, 46, 47]. LSH must describe to what extent they think that those factors are positive for each stakeholder group individually on the same scale. The differences between LSH and each of the stakeholders can be measured in this way.

TABLE 6 FACTORS THAT INFLUENCE THE SUCCESS OF THE ORGANIZATION

Factors that influence the success of the organization
Availability of partners to collaborate with
Improved governmental legislation
Industrial sector initiatives
Improved supplier relationships
Financial support

Education and training
Access to a library
Awareness of the organization by others

Furthermore, the stakeholders will be asked to what extent they have positively experienced the stimulating factors. The same list of factors as presented in Table 6 will be shown to the stakeholders and to LSH. The stakeholders must indicate whether the factors are positively experienced, LSH must present to what extent they think the factors are positively experienced by stakeholders. The scores of each factor will be compared between LSH and each of the stakeholders individually.

#### 5.2.2.4 Awareness perception asymmetry

The awareness of stakeholders measured in several ways. First, the level of awareness of stakeholders of the innovation program, LSH and the services of LSH is discussed, as well as their awareness of the possibilities for their organization. The second part of this asymmetry focuses on the preferences for communication tools to get in contact with LSH and the frequency of being informed. First is measured to what extent the stakeholders have heard of the innovation program and LSH. This is done with the following indicators:

TABLE 7 AWARENESS OF THE STAKEHOLDERS

<b>Awareness of the stakeholders</b>
Is the organization aware of the innovation program 'Life Sciences & Health'?
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?
Is the organization aware of the services of LSH?
Is the organization aware of the possibilities for the organization to make use of the services?

Each of the stakeholders has to indicate on a scale from 1 to 5 to what extent they are aware of those indicators. Furthermore, LSH must indicate what its perception is towards the level of awareness of each of the stakeholders on the same scale from 1 to 5.

The second measurement has its focus on communication tools. Each stakeholder obtains a list of communication tools, as presented in TABLE 8. Additionally, LSH must indicate which communication tool is most preferred in their perception for each stakeholder group individually. Each stakeholder must indicate by which communication tool they were informed about the innovation program. This indicator gains a score of 1. Each stakeholder can only indicate one communication tool. The scores of each indicator will be summed up. The perception of LSH towards the way stakeholders were informed about the innovation program is measured on the same scale.

Furthermore, the preferences of the stakeholders for each of the communication tools will be measured. The stakeholders can select which communication tools they prefer (TABLE 8). The selected tools will gain a score of 1, and all scores will be summed up. Additionally, LSH must indicate which communication tool is most preferred in their perception for each stakeholder group individually.

TABLE 8 COMMUNICATION TOOLS

Communication tools
By the internet (google or other search-websites)
By a link on another website
By news letter
By colleagues
By mouth to mouth
By personal mail
By an advertisement
By an article
By the BFC Event
By the Nyenrode Life Sciences & Healthcare event
Not

Finally, the preference of the stakeholders regarding the frequency of informing will be measured. In TABLE 9, the frequencies are presented. The frequency preferred by the stakeholders will be given a score of 1. All scores of each indicator will be summed up for each stakeholder group individually. To measure the perception of LSH about this frequency, LSH must indicate for each stakeholder group which frequency will be preferred, according to LSH.

TABLE 9 PREFERENCE OF STAKEHOLDERS FOR FREQUENCY TO BE INFORMED BY LSH

Frequency of informing
Once or twice a year
Quarterly
Every two months
Every month
Weekly
Not
Other

The awareness perception asymmetry is measured by comparing the scores of the indicators of each of the four dimensions of the stakeholders mentioned above with the scores of the perception of LSH about those dimensions. A comparison between the scores of the stakeholders and the scores of LSH is made for the awareness of stakeholders of the innovation program (TABLE 7), the communication tool with which the stakeholders were informed about

the innovation program (TABLE 8), the preferred tool for communication with LSH (TABLE 8) and the preferred frequency of communication with LSH (TABLE 9).

#### 5.2.2.5 Vision perception asymmetry

The vision of stakeholders can be seen as the perception of the stakeholders of LSH and the innovation program. This concept is not used here, to avoid confusion between the perception of LSH and the perception of the stakeholders. First, the vision of the stakeholders is measured. This is done by means of statements, as presented in

TABLE 10 and TABLE 11. Each stakeholder must indicate to what degree it agrees with each statement on a 5-points scale. A score of 1 means that the stakeholder strongly disagrees with the statement, a score of 5 indicates a strong agreement.

TABLE 10 POSITIVE STATEMENTS

Positive statements
Is LSH useful for your organization?
Do you think you will make use of the services of LSH in the future?
Do you think that the objectives of LSH will bear fruit?
My company could benefit from LSH, but would survive without is as well
I will make use of the services of LSH in the future
I trust the intentions of LSH to improve the innovation processes of the stakeholders
I trust the intentions of LSH to give the life sciences and health sector an impulse
I will make use of education and trainings provided by LSH
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company

TABLE 11 NEGATIVE STATEMENTS

Negative statements
Is LSH a threat to your organization?
Do you think LSH puts its own interests before the interests of the stakeholders' interests?
LSH provides comparable services as my organization
LSH provides comparable services as another organization that my company makes use of
LSH is a competitor of my company

Since the vision perception asymmetry measures the difference between the vision of stakeholder and the perception of LSH about this vision, the perception of LSH is the second

characteristic that has to be measured. Of each statement for each group of stakeholders, LSH has to indicate to what extent they think the stakeholders would agree to the statement. This will be done on the same scale.

#### 5.2.2.6 Service perception asymmetry

The service perception asymmetry measures the difference between the need for services of stakeholders and the perception of LSH of the need for services. First, all services of LSH are listed. This list is obtained via interviews within LSH. Each stakeholder must assess the list of services on the level at which they need the services on a scale from 1 to 5 (5 represents totally needed). The list of services is displayed in Table 12.

The characteristics of LSH are measured by their perception of the extent to which the stakeholders need each service. Again, LSH has to classify each indicator in the same way as is done by the stakeholders; all services are scaled from 1 to 5.

TABLE 12 SERVICES OF LSH

Services of LSH
Information about companies in the Netherlands
News items about the sector
Facts and figures about the sector
Financial support from government
Support to move to foreign country
Support to open new location in the Netherlands
Information about regional initiatives of the Netherlands
Information about subsidies
Information about regulations and guidelines
Information about education and trainings in the field of business skills
Information about education and trainings in the field of academic skills
Information about service providers (CRO's, CMO's, legal, finance, etc)
Information about venture capitalists
Information about sharing facilities with other companies
The possibility to offer your services to other organizations
The possibility to find services that your organization needs
Post calls for (funding) proposals
A market place where you can find qualified personnel
A market place to offer your equipment to other organizations
A market place to find equipment that you can use
A market place to offer materials for other organizations
A market place to find materials that you can use
A market place to offer inventions for licensing
A market place to find inventions to license
A market place to find partners in start of investigation to collaborate with
The possibility to advertise your company (e.g. on website, newsletter, etc)
Access to company database of the Netherlands

Access to a database for product information
Access to a database for patent information
Access to a database to obtain information about progress concerning a certain target (competitive intelligence)
Access to library to obtain scientific literature
Access to database to find service organizations (legal, communication, etc)
Access to database to find collaborating partners
Access to database to find incubators
Access to database to find venture capitalist

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### 5.2.3 SERVICE COMPATIBILITY

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The service compatibility is measured by the differences in service characteristics of LSH and the service characteristics of the stakeholders. As shown in Table 2, the service characteristics of stakeholders consist of the need for services by stakeholders. The services compatibility is the final asymmetry problem that will be measured between LSH. The need for services by stakeholders was already measured in section 5.2.2. The 'services provided by LSH' are measured by presenting the same list of services to LSH as is done to the stakeholders (see Table 12). LSH must indicate for all stakeholders to what extent each indicator is considered to be offered to the stakeholders on a scale from 1 to 5, of which is 1 totally not important and 5 totally important. The need for services will be compared with the services that LSH provides to the stakeholders.

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### 5.2.4 BARRIER ASYMMETRY

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The barrier asymmetry is the second asymmetry that will be measured between different stakeholders, in line with the goal asymmetry. The barrier asymmetry measures differences in barriers experienced by each of the stakeholders and the problems that cause the inability to fulfill the goals. First, the achievement of the goals will be measured for each stakeholder individually. Second, the indicators that caused the inability to fulfill the goals will be measured. Both measurements were already done for the barrier perception asymmetry (Column I of Table 4 and Table 5 respectively). The same scores will be used here.

Furthermore, the barrier asymmetry analyzes the link between the goals that cannot be achieved by stakeholders and the importance of those goals for each of the stakeholders. Again, the operationalization of those dimensions have already done (Column I of Table 5 for both the importance of the goal and the achievement of the goal).

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### 5.2.5 STIMULI ASYMMETRY

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The stimuli asymmetry is measured in several ways. First, differences between the scores of factors that have a positive influence on each of the stakeholders and second, the differences in scores of the factors that are experienced by each of the stakeholders will be measured. Both indicators are already operationalized to be able to measure the stimuli perception asymmetry.

Furthermore, the differences between the scores of the factors that have a positive influence on the stakeholder and the scores of the factors that are experienced by the stakeholders will be measured for each stakeholder individually. The same measurement is used as for the stimuli perception asymmetry (TABLE 6).

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### 5.2.6 AWARENESS ASYMMETRY

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In the awareness asymmetry, differences between stakeholder groups regarding their awareness of the innovation program and their preferences for means of communicating with LSH will be measured. This will be done in four dimensions; the awareness to the program, the most common used communication tool, the most preferred communication tool and the most preferred frequency of being informed by LSH, as mentioned in section 5.2.2.4. Those dimensions were operationalized before, in order to be able to measure the awareness perception asymmetry. First, the awareness of the stakeholders is measured by means of the indicators of Table 7. Additionally, the stakeholders must indicate which communication tool is most used to bring them in contact with LSH (TABLE 8). The same list of indicators of TABLE 8 is used to identify the most preferred communication tool of the stakeholders. Finally, the most preferred frequency of communication with LSH must be selected (TABLE 9). The same operationalization as presented in section 5.2.2.4 will be used here. The differences in scores of each indicator for each dimension will be measured between the stakeholder groups.

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### 5.2.7 VISION ASYMMETRY

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The vision asymmetry is measured on the basis of statements, which are indicated in

Table 10 and Table 11. For each statement, the stakeholders have indicated their level of agreement on a scale from 1 to 5. The vision asymmetry is measured by differences in scores between each of the stakeholders in their vision characteristics.



## 6. METHODOLOGY

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The unit of analysis of this research is the relationship between LSH and each of its stakeholders and between the different stakeholders. The characteristics of interest related to this unit of analysis are the amount of congruence between LSH and its stakeholders and the alignment of services provided by LSH via decreasing the asymmetry problems between them.

The methodology of this research will be a comparative case study. This method is useful because of three conditions of this research. First, the research question is explanatory. Secondly, the behavioral events are not in control of the investigator, since the involved stakeholders cannot be influenced by the investigator. Finally, the focus of the research is on contemporary events. These three conditions make the use of a comparative case study useful to answer the research question [57].

The aim of this research is to improve the services provided by LSH and diminish the asymmetries between LSH and each of its stakeholders. The differences in organizational characteristics must be identified to be able to solve the problems arising from these differences [20]. Therefore, not only data about LSH must be collected, but also data on each of the stakeholders must be obtained. By only collecting data of LSH, the analysis will be incomplete, since both the organizational characteristics and the need for and delivery of services of LSH and its stakeholders must be compared. The scope of this research is therefore the relation between LSH and each of its stakeholders and the asymmetry problems they experience. The focus of this research is on the decreasing of the asymmetry problems of LSH. Asymmetry problems of other innovation programs initiated by the government will be left out of consideration.

### 6.1 CASE SELECTION

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The case that will be investigated in this research is LSH. LSH is the executor of the innovation program 'Life Sciences & Health', initiated by the Dutch government. LSH is the executor of the innovation program and interacts with different stakeholders. With each stakeholder, mutual benefits must be created. Stakeholders involved in the life sciences and health sector are, among others, pharmaceutical SME's, large pharmaceutical companies, the government, universities and research centers, technology transfer offices, valorization organizations, top institutes, investors and patient's associations. In this research, the relationship between LSH and three important groups of stakeholders will be investigated, namely the small and medium enterprises (SME's), technology transfer offices (TTO's) and regional initiatives (RI's)<sup>1</sup>. SME's are important for LSH, because this is the largest stakeholder group of this sector. Furthermore, SME's are crucial for valorization of fundamental knowledge, which is an objective of LSH. TTO's

are important for LSH, because they transfer fundamental knowledge from the universities to the industry. This is also an objective of LSH. Finally, RI's are included in this research because they have a comparable function as LSH, but on a smaller scale. To make sure that the activities of LSH are complementary to the activities of the RI's instead of competitive, RI's are included.

In this chapter, these stakeholders will be discussed, as well as the reason why they are included in the research. For these groups of stakeholders, the dimensions that determine asymmetry problems between them will be investigated. These dimensions are the organizational characteristics of both LSH and each of the three groups of stakeholders and the service characteristics of LSH and each of the three groups of stakeholders. Accordingly, for each stakeholder selected, data must be collected about the dimensions mentioned before.

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## 6.1.2 STAKEHOLDERS INVOLVED IN THE RESEARCH

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As mentioned before in the theoretical chapter, LSH can be classified as an intermediary. Intermediaries interact with all actors of a sector. In this section, the stakeholders that will be analyzed in this research will be discussed. This will be done by both using scientific literature about each of the stakeholders and by using input from LSH. This section will discuss the most important stakeholders: SME's, TTO's and RI's. Furthermore, information about LSH and the innovation program will be given. For each stakeholder included it will be argued why they are important for LSH and why their characteristics should be in line with those of LSH.

### 6.1.2.1 Pharmaceutical SME's

The life sciences and health sector is dominated by SME's. SME's have a leading function in the science push context [69]. The aim of LSH is to duplicate the number of R&D based LSH-companies from 150 to 300 companies [16]. To be able to achieve this goal, collaboration of SME's with LSH and commitment of SME's to the innovation program is needed.

SME's are important for the life sciences and health sector in several ways. First, these companies have the ability to transfer fundamental knowledge of universities into industry [13]. They function as a crucial link in the valorization chain. SME's are often highly specialized and can therefore absorb explicit knowledge. In addition, SME's are of importance for large pharmaceutical companies, because SME's are often highly specialized and large pharmaceutical

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<sup>1</sup> The aim was to also include large pharmaceutical companies in this research. Because of the extreme low response rate of those stakeholders, it was not possible to analyze them or to include them in this research.

companies can use their knowledge and input in the further development of products [71]. In the valorization process, SME's are one link in the commercialization of fundamental knowledge into socio-economic benefits. Commitment of SME's towards LSH and the innovation program is needed in order to be able to support the SME's in the way they need. When LSH is able to support the SME's, the time to bring products to the market can possibly be shortened, which is one of the aims of the innovation program.

In this research, it is not possible to interview the total population of SME's. Besides the fact that it is extremely time consuming, the probability that each SME will collaborate is low. Therefore the choice is made to interview a sample of the total population, and a 10% response rate is desired. This means that the aim is to interview 15 SME's. To make sure that the SME's represent all regions of the Netherlands, the selection of the SME's will be done on the basis of the classification of regional initiatives. Regional initiatives are spread over the country. In that way, the SME's interviewed in this research will be located all over the Netherlands as well.

#### 6.1.2.2 Technology Transfer Offices

Universities and research centers are the starting point for fundamental research in the life sciences and health sector. These organizations make an important contribution to technology transfer since they are the main source of fundamental knowledge [67]. These institutes are often not aware of the commercial potentials of their knowledge [11]. Transfer of knowledge towards industry leads to the commercializing of knowledge [10]. Contribution of universities and research centers to the innovation program are therefore important, to optimize the potential of the knowledge transfer from universities to commercial benefits. Universities have different departments that can participate in research in the life sciences and health sector, and there are many researchers involved in those investigations. It is therefore difficult to include all departments and researchers in this research. Therefore, not the universities and research centers will be involved in the research, but the TTO's. TTO's assist in the commercialization of fundamental knowledge of universities, since they facilitate in licensing of knowledge resulting from university research to the industry [68]. In the Netherlands, each university and/or research center has a TTO. The TTO's represent those universities and research centers. The TTO's will be included in this research, since they cover the discoveries of universities and research centers and facilitate in the commercialization of knowledge. By including TTO's into the research, all departments and researchers of universities and research centers are indirectly included in the research. In the Netherlands, there are 12 TTO's. All technology transfer offices will be included in the research. This means that the total population of TTO's will be included.

#### 6.1.2.3 Regional initiatives

The final case that will be investigated in this research is the case of regional initiatives in the Netherlands with a link to the life sciences and health sector. In the Netherlands, there are eleven regional initiatives, spread over the country. Regional initiatives are intermediaries in a

region that support the specific region. They create a network for entrepreneurs, scientists and related parties. Furthermore, they support their particular region and try to attract companies to their region. LSH tries to create more unity in the life sciences and health sector. Shared goals and perceptions between LSH and the regional initiatives must be created. At this moment the goals of LSH and the goals of the regional initiatives differ, since LSH tries to promote the Dutch life sciences and health sector as a whole, while the regional initiatives promote their region, and compete with other initiatives.

Since the population of regional initiatives comprises eleven organizations, the complete population will be investigated in this research.

#### 6.1.2.4 Life Sciences & Health

LSH is an organization that executes an innovation program of the government. In this chapter, the services of LSH will be discussed. LSH has its focus on three action lines: Credit, Collaboration and Climate. The first action line, Innovation Credit, is meant for high-risk, high-tech organizations with economic potential. By supporting SME's by providing credits, the innovativeness of these organizations is stimulated. The risk-bearing loans are allocated to projects that convert technology into 'first proof in patients'. The Innovation Credit will cover 35% of the project, the remaining 65% should be invested by the market. The maximum amount of credits per project is 5 million euro [74].

The second action line, (Inter)national Collaboration, stimulates the collaboration between Dutch SME's and international SME's and big pharmaceutical companies. Furthermore, facility sharing is stimulated by investment in equipment and national infrastructure [9]. EuroTransBio is a subsidy that stimulates international collaboration. Originally, it was founded by six European countries with the aim to promote the transnational collaboration in the field of biotechnology [75]. The subsidy is meant for SME's that have their focus on R&D in the life sciences and health sector.

Mibiton stimulates Dutch life sciences entrepreneurship by investing in the national infrastructure [76]. Investments are made in equipment and special laboratories. Research organizations and young life sciences organizations are able to make use of these facilities. Mibiton has invested 20 million euro in 55 facilities [76].

The third action line, Climate, is a set of actions with the aim to stimulate the Dutch life sciences and health innovation and investment climate. Innovation and investment must be stimulated in the Dutch life sciences and health sector by this action line. This will be done in four blocks: investigate, facilitate, educate and communicate. LSH provides several services that can be linked with one of these blocks.

The investigate-block is meant to examine the success factors of the sector that are crucial to capitalize on knowledge. Hurdles of the sector will be identified. Currently, there are three

research projects carried out in cooperation with the Nyenrode University; the Yearly Strategic Outlook, the Challenges study and the Biopartner evaluation, the second follow-up study. The Challenges study tries to gain more insight in how the Dutch life sciences and health companies could be supported and how their success can be increased regionally, nationally and internationally [77]. The outcome of the study will be used as an outline of a strategy to improve the investment and innovation climate of the Dutch life sciences and health sector for the upcoming years [9]. The Yearly Strategic Outlook focuses on the improvement of the economic performance and competitiveness of the Dutch life sciences and health sector. The aim is to provide recommendations towards the government, academia and industry on how to improve the success of the sector [77]. The Biopartner Long Term Outcome investigates the outcome of the Biopartner project from 2000 till 2004. Biopartner was a project to stimulate life sciences entrepreneurship in the Netherlands. The aim of the project was to stimulate the entrepreneurial climate at the Dutch universities, medical centers and research institutes. On request of the Ministry of Economic Affairs, the program was evaluated in 2005. This second evaluation will be done to investigate the performance of the Dutch life sciences companies that were established during the Biopartner period (2000-2004) [9].

In the facilitate-block, the achievements of the investigations will be facilitated in order to ensure growth of start-ups and investments by foreign companies. There are two main areas identified that will be facilitated by LSH: the business climate and human capital. The actions that are taken to improve the innovation and investment climate are financial support, education and trainings programs and providing access to a Dutch life sciences and health

company database. Action line 1 and 2 are subject of this facilitate-block, since they facilitate the sector by financial support and equipment. Furthermore, professionals are important drivers of the life sciences and health sector, since this sector is knowledge-driven. In this sector, there is a strong need for professionals with research and analytical skills. One example of the human capital actions to attract professionals to the Dutch life sciences and health sector is the International Talent Pool. This program has the aim to create insight in the career opportunities for talented professionals from abroad in the Netherlands [78].

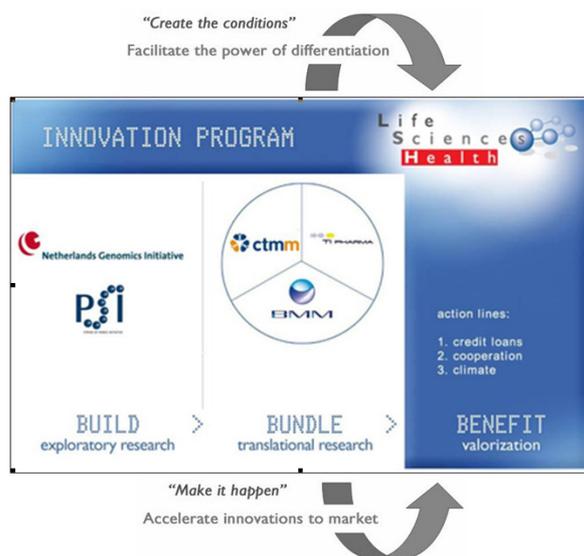


FIGURE 5 BUILD - BUNDLE - BENEFIT (CORPORATE STORY, 2009)

The educate-block incorporates training courses and educational events to raise the overall knowledge level of the life sciences and health sector. The courses have different levels of education and training and are aimed at improving both analytical as well as entrepreneurial skills of entrepreneurs and researchers. Via these courses, the overall business and research level of the life sciences and health sector will improve. Besides that, the trainings and courses can help in closing the gap by providing highly educated professionals for which is a strong need [9].

The communicate-block is used for the positioning of the Dutch life sciences and health sector at an international scale. Furthermore, the sector is stimulated to expand into Europe. An example is the collective representation of the Dutch life sciences and health sector at the Bio 2009, instead of several small initiatives that will go unnoticed at a large event as the Bio 2009.

The services that LSH provides can be scaled on a wide range, varying from financial support to structural facilitating support. Figure 5 shows the structure of the LSH program. The structure of LSH is shown in blue, and is an inverted I-form. The horizontal line can be seen as the covering part for the complete sector, to present the sector as a unity. At the left, the public research centers are supported, the middle pillar covers the public-private partnerships whereas the right pillar represents the private investments. This is presented with the arrow on top of the structure. It has the aim to facilitate the sector in presenting itself as one, and uses the differences of the stakeholders to become unique.

The second function of LSH is to act as accelerator. This function is presented in the action lines, mentioned before. Whereas the horizontal function of LSH is to present the sector as a unity, the vertical function is to facilitate the stakeholders in a way that innovations will be brought to the market faster. This research is mainly focusing on the vertical function of LSH, since this function covers the services it provides to enable the stakeholders to innovate and invest. The services of LSH can be divided in several actions: investigation support, facilitation support, educational support and communication support. The questions in the interview list will be harmonized with these actions, to see whether the actions are wished for by the stakeholders.

## 6.2 DATA COLLECTION

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To be able to answer the main question, multiple sources will be used to collect data. This will increase the reliability of the research [57]. The stakeholders of LSH have been identified from scientific literature and input from LSH.

Empirical data must be collected in order to be able to answer the main research question. Information about the organizational characteristics and the service characteristics must be collected for each stakeholder. Besides that, information about the organizational characteristics and service characteristics must be collected for LSH. These data will be obtained by interviews with SME's, TTO's, RI's. Of those organizations, the managing director or CEO will

be interviewed. Furthermore, LSH will be interviewed. By interviewing the stakeholders and LSH, the conceptual model will be tested on the situations of the stakeholders. In that way, the empirical data can be used to further refine the scientific literature. The collected data are used to identify asymmetry problems between LSH and the stakeholders and among stakeholders. After the identification of the asymmetry problems, suggestions can be derived to decrease the asymmetry problems.

Before data collection, three pilot interviews per stakeholder group have been done to investigate whether the characteristics of both LSH and each of the stakeholders are completely represented in the question list. The data collected during these pilot interviews have been used to refine the question list for the interviews and add characteristics that were not mentioned. After that, eleven SME's, ten TTO's, seven RI's and 5 employees of LSH were interviewed to obtain empirical data, which makes a total of thirty-three interviews.

### 6.3 DATA ANALYSIS

The data will be analyzed in different ways. First, each case is individually analyzed. This is done to be able to investigate the influence of the characteristics of each stakeholder individually on the asymmetry problems. Second, the differences of each characteristic between stakeholders are analyzed. This is done to investigate whether one stakeholder has more asymmetry problems related to that characteristic than other stakeholders. This is the multiple-case analysis. Each type of analysis will be discussed in this section. Each of the steps of the analysis is needed to be able to identify the asymmetry problems between LSH and its stakeholders, and among stakeholders.

The stakeholders are categorized in group 1 to group 4, as shown TABLE 13. In this table can be seen that the number of organization that is interviewed is lower than expected. This is due to a lower response rate than foreseen. The individual-case analysis focuses on one group at a time; the multiple-case analysis compares different groups with each other and the cross-case analysis investigates all stakeholders together on one characteristic.

TABLE 13 CATEGORIZATION OF STAKEHOLDERS

Group 1	Group 2	Group 3	Group 4
Small and Medium Enterprises	Technology Transfer Offices	Regional Initiatives	LSH
11 organizations	10 organizations	7 organizations	5 employees

The remainder of this chapter will explain the three types of analysis; the individual-case analysis, the multiple-case analysis and the cross-case analysis. In the operationalization section is shown how all characteristics are classified and measured (Table 2 and Table 3). Each indicator of each characteristic is scored from 1 to 5. During a number of interviews, it appeared that not

all stakeholders have indicated all indicators of each dimension. This means that they only have indicated the options that were important to their organizations. Indicators that they classified as unimportant were not scored from 1 to 5. Those indicators are scored with the value 0. Since the indicators with value 0 are identified by the stakeholders as ‘totally not important’ (because they were not mentioned by the stakeholder), and value 1 equals ‘totally not important’, the meaning of both values is the same. Indicators with the value 0 can be converted to the value 1. The scores of the indicators are needed to be able to measure the asymmetry problems.

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### 6.3.1 INDIVIDUAL-CASE ANALYSIS

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The first step of the analysis is the individual-case analysis, in which each type of stakeholder is analyzed separately from the other types of stakeholders. As indicated in Table 13, each group consists of multiple organizations. Each organization has classified all indicators of all characteristics.

#### 6.3.1.1 Each indicator per dimension per group

The first step of the individual case analysis is the analysis of each indicator per dimension. This will be done for each stakeholder group individually. The importance of each indicator can be measured in this way. As mentioned before, each organization of each stakeholder group has scored each of the indicators from 1 to 5. For each of the indicators, both the mean of those scores and the coefficient of variation is determined. The mean of the score ( $\mu$ ) is determined by summing up the scores of all organizations of one stakeholder group divided by the number of organizations. The coefficient of variation ( $C_v$ ) is determined by the standard deviation ( $\sigma$ ) divided by the mean ( $\mu$ ).

$C_v = \frac{\sigma}{\mu}$ . The mean of the indicator is important to be able to compare the scores of stakeholders with each other and with LSH. The coefficient of variation is important because this gives information about the unanimity of the stakeholders. A low coefficient of variation indicates a unanimity among the stakeholders. The standard deviation is a measure of the dispersion. In other words, it shows how much variation there is from the mean. In this research, the standard deviation can, in line with the coefficient of variation, determine the relative unanimity of the stakeholders. The reason why the coefficient of variation is used instead of the standard deviation is because of the fact that the coefficient of variation is a value represents both mean score and the standard deviation. The coefficient of variation allows the comparison of unanimity of the stakeholders when indicators have different means and standard deviations.

The mean and the coefficient of variation of each indicator of each dimension per stakeholder group will be presented in a table. Not all indicators will be discussed; only the indicators with an extreme mean value and a low coefficient of variation will be analyzed. With an extreme value is meant a score below 2.25 or above 3.75. In that case, the stakeholder have a strong

opinion about the indicator. Furthermore, the coefficient of variation must be below 0.50<sup>2</sup>. This indicates that the stakeholders are rather unanimous about the indicator. In other words, they share the same opinion.

This part is the quantitative measurement of the indicators. This only shows which indicators are important to a specific group of stakeholders, it does not show why the indicators are important. Additionally, qualitative information obtained during the interviews will be used to explain the outcome of the analysis.

The second step is to identify the correlation coefficient ( $r$ ). The correlation measures the coherence between sets of measurements of two indicators. In this research, the correlation coefficient of the mean and the coefficient of variation is estimated for each set of indicators for each dimension and for each stakeholder group individually. This indicates whether the importance of the indicator influences the unanimity of the stakeholders. The correlation coefficient varies from -1 to +1. A score of 1 indicates that the stakeholders become more unanimous when the indicator is less important, a score of -1 indicates that the stakeholders become more unanimous when the indicator is more important [59]. Because of the low number of observations and interviews in this research, this score is not a definitive and invariably answer, but can more be seen as an indication.

#### 6.3.1.2 Categorization of indicators within a dimension

The second step of the individual-case analysis is the categorization of each indicator within a dimension. This is done to investigate which indicators are most important for a particular group within a dimension. Each dimension consists of a list of options to choose of. In the former analysis, the importance of each indicator is measured. This information will be used to be able to categorize the indicators of each dimension. The categorization of indicators will be done by categorizing the indicators on their mean, and secondly on their coefficient of variation. The classification is first done by ranking the indicators from the highest score to the lowest score, and additionally ranked from the lowest coefficient of variation to the highest coefficient of variation. This is done to be able to rank the indicators with the same mean.

#### 6.4.1.3 Contribution of each indicator to asymmetry problems

The third step is the analysis of the contribution of each indicator to the asymmetry problems. In Figure 4, the directions of measurements of asymmetry problems are presented. In this

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<sup>2</sup> There is no probability distribution known for the coefficient of variation [79]. In order to assess the critical value of the coefficient of variation, the empirical data is used to determine this value. The empirical data showed rather unanimous stakeholder by a coefficient of variation of 0.50. Therefore, this value is used as critical value in this research.

individual-case analysis, the contribution of each indicator of each dimension to the asymmetry problems between the stakeholders and LSH is measured. As shown in Figure 3, these asymmetries are the goal asymmetry, the perception asymmetry and the services compatibility. The asymmetries between different stakeholders are not analyzed here, because that is determined by the differences between the different cases and will be done in the multiple-case analysis.

The differences in mean and distribution between LSH and each of the stakeholder groups is tested by using a paired samples t-test. This allows to measure whether two indications have the same mean or not [79]. In other words, it can be determined whether LSH and the stakeholders have given the same scores for an indicator. A difference in mean between LSH and the stakeholders indicates that there is an asymmetry problem between them. The larger the difference, the larger the asymmetry problem. Because of the small sample size of the stakeholder groups, the values of the t-tests are not definitive and invariable, but they give an indication of the differences in mean scores. A larger sample size of the stakeholder groups would enhance the value of the t-tests.

#### 6.3.1.4 Comparison between dimensions

The final analysis that will be done per group is the comparison between dimensions on the basis of the scores given to the same indicators. Again, this will be done by using a paired sampled t-test. Differences in mean between the same indicator of two different dimensions can be measured. This will only be done for the indicators which are ranked with an extreme value and a low coefficient of variation, as explained in section 6.3.1.1. This analysis must be done for each comparison of indicators, as presented the first column of TABLE 4 and in TABLE 5. A significant score derived by the t-test indicates that the mean score of the two dimensions (both measured by the same indicator) differ from each other.

TABLE 14; the comparison between the goals for now and the unachieved goals of the stakeholder groups, and the comparison between the factors with a potentially stimulating effect on the organization and the factors that the organization has experienced as positive. Both dimensions of the comparison are measured with the same list of indicators, as presented the first column of TABLE 4 and in TABLE 5. A significant score derived by the t-test indicates that the mean score of the two dimensions (both measured by the same indicator) differ from each other.

TABLE 14 COMPARISON OF SAME INDICATORS OF DIFFERENT DIMENSIONS

Comparison of:	
<i>Dimension I</i>	<i>Dimension II</i>
Goals for now	Unachieved goals
Factors with a potentially stimulating effect on the organization	Factors that the organization has experienced as positive

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## 6.3.2 MULTIPLE-CASE ANALYSIS

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The second type of analysis is the multiple-case analysis. The differences between the different stakeholders will be analyzed here. This will be done for each indicator of each dimension. In this way, for each indicator it can be determined in which group the asymmetry is the largest. The largest asymmetry indicates the largest problem.

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### 6.3.2.1 Asymmetry problems among stakeholders

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The multiple-case analysis focuses on the asymmetry problems between different stakeholders indicated in Figure 4. The values of the means and coefficient of variation of all indicators of all characteristics are compared with each other.

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#### 6.3.2.2.1 Differences in indicators between groups

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In the individual case analysis, the differences between LSH and each of the stakeholder groups were measured. In the multiple case analysis, the differences among stakeholder groups is measured. The mean and coefficient of variation of each indicator is already analyzed during the individual case analysis. Those scores will be used here to analyze whether the three different stakeholder groups vary in their opinion about the indicators. Differences in values suggest that one group values a particular indicator as more important than other groups. Not all indicators will be analyzed; only the indicators which are ranked with an extreme value and a low coefficient of variation, as explained in sector 6.3.1.1., by one of the three stakeholder groups will be analyzed.

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#### 6.3.2.2.2 Differences in categorization of indicators between groups

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The categorization of indicators within a dimension of one group will be compared with the other groups. The categorization of the indicators is already done during the individual case analysis, as explained in section 6.3.1.2. When there is no difference in categorization of priority, the asymmetry problems are the same for each group. When there are differences between them, one group prioritizes the indicators in another way than the others. For each group separately it will be analyzed what the difference in priority of indicators is with respect to the other groups. In this way, it is possible to identify for each group, at which level they depart from the other groups.

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#### 6.3.2.2.3 Differences in dimensions between groups

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During the individual-case analysis, the differences between dimensions with the same list of indicators were measured. In the multiple-case analysis, those differences will be compared between different groups of stakeholders. Again, only the indicators which are valued with an

extreme mean score and a low coefficient of variation by one of the three stakeholder groups will be analyzed.

## 7. RESULTS

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In this chapter, the results of the data analysis will be presented. This will be done on basis of the sub research questions. First, characteristics of the stakeholders will be analyzed. Secondly, the characteristics of LSH will be presented. After that, the similarities and differences in characteristics between LSH and the stakeholders will be discussed. Finally, the differences and similarities in characteristics between the different stakeholders will be analyzed.

The results of the analyses discussed in this chapter are presented in tables. Those tables can be found in Appendix I. The extreme values of indicators, as well as the coefficient of variation are colored. Indicators which are ranked with an extreme high average value are colored green. Indicators with an extreme low average score are colored red. The indicators with a coefficient of 0.50 or less are colored grey. The focus will be on the indicators with both a grey colored coefficient of variation and a mean that is colored either green or red. This is done, because the stakeholders are unanimous about these indicators and they have a strong opinion about the indicators.

### 7.1 CHARACTERISTICS OF THE STAKEHOLDERS

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The first step of the analysis is presenting the characteristics of the stakeholders. This will be done according to the individual case analysis. This means that the indicators of each dimension will be analyzed for each stakeholder individually. Of those dimensions, the most important indicators will be discussed. Furthermore, a comparison of dimensions with the same indicators will be made. Finally, the correlation coefficient of each dimension will be presented to analyze whether the stakeholders become more unanimous when the indicator is more important to the stakeholder. This part of the analysis will be started with the characteristics of SME's, followed by TTO's and RI's. Section 7.1 will give an answer to the first sub research question: *What are the organizational characteristics and service characteristics of the stakeholders?*

#### 7.1.1 CHARACTERISTICS OF SME'S

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In this section, the characteristics of SME's are analyzed. This will be done by discussing each of the dimensions (the goals, barriers, stimuli, awareness, services and vision of SME's). Of each dimension, the most important indicators will be discussed. Only the indicators with an extreme value and a low coefficient of variation will be analyzed, as discussed in section 6.3.1.1.

##### 7.1.1.1 The goals of SME's

The first dimension is the goals of SME's. In Table 25, the goals of SME's are ranked on basis of their mean score and coefficient of variation. In this table can be seen that there are three

indicators with a high extreme mean and a low coefficient of variation. This means that those indicators are important goals of SME's. These goals are gaining funding for research, networking with other organizations in the sector and finding highly qualified employees. Those conditions are needed in order to be able to perform their activities. Organizations need financing from different types of investors. Both subsidies of government and venture capital are needed. The research has different phases in the investigation, from the early discovery until drug development [80]. To be able to continue the research, all phases of the research must be covered by funding. Furthermore, SME's have indicated that they do not have all the resources of their own, and have to network to be able to find collaborating partners, users, equipment and employees. Finally, highly qualified personnel are important in this sector, because the research is knowledge intensive.

There are two indicators with a low extreme mean and a low coefficient of variation. The SME's are unanimous about those indicators and these indicators are not important for SME's. Those indicators are improving their business skills and improving their academic skills. According to SME's, those indicators are not important for performing their activities.

#### 7.1.1.1.1 The correlation coefficient of the goals of SME's

The correlation coefficient of the goals of SME's indicated whether the stakeholders become more or less unanimous when the importance of the indicators decreases. The correlation coefficient of the goals of SME's is presented in Table 25. The score of -0,74 indicates that the stakeholders become less unanimous when the goal becomes less important. The other way around, SME's are more unanimous about important goals.

#### 7.1.1.2 The barriers of SME's

In Table 26, the barriers of SME's are presented. In this table can be seen which of the goals are difficult to achieve by SME's. A high mean indicates that the goal is achieved, a low mean score means that SME's had difficulties in achieving this goal. In the table can be seen that there are three indicators with a low coefficient of variation. Only one of those indicators has an extreme mean score. This indicator is networking. SME's have indicated that they possess networking capabilities. They have no difficulties in finding collaborating partners, although it is sometimes difficult to effectively collaborate due to differences in culture, firm size and firm type. SME's have indicated that finding qualified personnel is partly achieved. Some of the SME's do not experience any problems with this, while others have indicated that the number of qualified employees is not in line with the number of vacancies.

There are no indicators which have both an extreme mean score and a low coefficient of variation. When the mean score is close to 0, the coefficient of variation is less reliable. In that case, the score of the standard deviation will also be considered. One of the indicators has a low standard deviation. This is moving to a foreign country. This is totally not achieved by SME's. The reason for this is that moving to a foreign country is totally not one of the goals of SME's.

The second step of the barriers of SME's is determining what the causes are of the inability of SME's to fulfill their goals. This is presented in Table 27. In this table is shown that the two most important reasons are also ranked as most unanimous. The two most important causes of the inability to fulfill the goals are a lack of financial resources and a lack of continuity of financial resources. The main reasons given are a gap in financing between proof of principle and proof of concept and the absence of structurally funded projects. Most organizations do not have a problem with the financing of the research until the proof of principle. This is often covered by subsidies of the government. With proof of principle is meant the phase of research in which the pharmacological effect results in an expected change in a relevant biomarker, also known as preclinical results. The proof of concept provides clinical confirmation that the investigational product possesses a desired pharmacological effect in patients with the disease of interest [81]. Another reason for financial problems is subsidies. Although the subsidies are marked as useful, the implementation of the subsidies can be improved. For instance the Innovation Credit. According to the SME's, this instrument is useful, but this credit only covers 35% of the research costs. The other 65% must be covered by other financial means. The government only finances the 35% after the remaining 65% is covered. But private investors start the financing after the payment of the government. Therefore, it is difficult to gain the full 100% of financing by different types of investors. A lack of financial means slows down the development process of organizations. There must be a constant financial flow to be able to continue the research.

#### 7.1.1.2.1 The correlation coefficient of the barriers of SME's

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The relation between the mean score of the indicators and the coefficient of variation is presented by the correlation coefficient. The correlation coefficient for the (un)achieved goals of SME's is -0,84 (Table 26). This means that the stakeholders become more unanimous about the indicator when the goal is more achieved. The correlation coefficient of the causes of the inability to fulfill the goals is -0,65 (Table 27). This means that the stakeholders become more unanimous when the cause is more important, but this is not completely linear. There are indicators which are unanimously ranked as not important.

#### 7.1.1.2.2 Comparison between the goals and barriers of SME's

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In this section, a comparison will be made between the goals of SME's and the goals that are difficult to achieve. This comparison is presented in Table 33. The goals which are ranked both with an extreme high mean score and a low coefficient of variation will be analyzed via a t-test. With this test it can be identified whether the most important goals of SME's are also achieved by SME's. The most important goals are gaining funding, networking and finding highly qualified employees.

With this test will be measured whether the scores for one indicator of both dimensions differ from each other. In other words, it will be measured whether the importance of the goal corresponds with achievement of the goal. In Table 34 it can be seen that only the difference

between the goal funding and the level of achievement of funding has a significant score. This means that the mean score of both indicators are not equal. In other words, funding is rated more important by SME's than that they have achieved it currently. This cannot be said about networking or finding highly qualified employees.

### 7.1.1.3 The stimuli of SME's

The stimulating factors of SME's to achieve their (most important) goals are presented in Table 28. The three most positive valued factors are financial support, the availability of partners to collaborate with and access to a library. Those indicators have both a high average mean and unanimity. As mentioned before, financial support is an important factor to enable research. Without financial support, doing research is impossible. The availability of partners to collaborate with is also important for SME's, because they have indicated that they are too small to have all resources in-house, and that collaboration is needed to get access to all needed resources. Finally, access to a library is indicated as very important. Libraries give access to the latest developments in the sector and to be able to know what is developed. SME's have indicated that they make use of literature constantly to be aware of new developments.

The second part of this dimension shows to what extent SME's have experienced the factors as positive. This is shown in Table 29. In this table can be seen that the two most positively rated factors are also the two factors about which the stakeholders were most unanimous. Those factors are the availability of partners to collaborate with and access to a library. Almost all SME's have indicated that they can find partners to collaborate with, often in combination with projects like CTMM, BMM or TI Pharma. Access to a library is also experienced as stimulating by most of the SME's. This access is often illegal, because subscription to these databases is extremely expensive. Access is therefore often gained by indirect and illegal routes. Only SME's located in university buildings have indicated that they have a legal access.

#### 7.1.1.3.1 The correlation coefficient of the stimuli of SME's

The correlation coefficient of both the stimulating factors and the experienced factors of SME's are estimated as close to -1 (Table 28 and 29). This means that there is an almost perfect positive relation between the importance of the factors and the unanimity of the SME's. The less stimulating the factors is, the less unanimous the stakeholders are. The same accounts for the level in which the factors are experienced; the less the factor is positively experienced by SME's, the less unanimous they are about this factor.

#### 7.1.1.3.2 Comparison between stimuli

In this section, the differences between factors that have a positive influence on the organization and that are experienced by SME's are analyzed. In Table 35, the three indicators with the highest score and the lowest coefficient of variation on positive influence are presented. Those factors are financial support, the availability of partners to collaborate with

and access to a library. Of those factors, it will be analyzed whether they are positively experienced by SME's, by using a t-test. The results of these t-tests are presented in Table 36. In this table can be seen that there is only one comparison with a significant score. This is the comparison between the positively stimulating effect of financial support and the level in which this is positively experienced. Therefore can be said that financial support is rated by SME's as a positively stimulating effect on the performance of SME's, but they have not experienced this financial support as much as they desired. Because of the fact that the remaining comparisons are not significant, of those comparisons cannot be said that there is a difference between the positively stimulating effect on the organization and the level in which the SME's have experienced this.

#### 7.1.1.4 The awareness of SME's of the innovation program

The following section shows to what extend SME's are aware of the innovation program, how they were brought in contact with LSH and how they prefer to stay in touch. In Table 30, the awareness of SME's of the innovation program and the services of LSH is presented. In this table can be seen that the awareness of the SME's is low. Only the average score of the awareness of the innovation program is around a score of 3. This means that they heard of the innovation program, but did not make use of the program. The other three indicators, are scored even lower, with an average score of 2. This means that they have heard of LSH and the services of LSH, but that they have no idea what they are. Most of the SME's indicated during the interviews that they did not have heard of the innovation program until the request for an interview.

The SME's were asked whether or not they went to the Nyenrode Life Sciences & Healthcare Event. This event was the kick-off of the innovation program. The entire sector was invited. In Figure 6, the frequency is showed of the number of SME's that went to the event. Another division was made, by asking whether the event was informative or not. Almost half of the SME's that were interviewed were not present at the event. Of the six SME's that were at the event, five of them found it interesting. Most commonly mentioned was that the event was a good network opportunity to speak with interesting people from the field. Suggestions for improvement were to split the sector into subgroups, for instance into fields of research or types of organization. In this way, the event can be made more specific and topics can be discussed that are relevant to that group.

In Figure 7 can be seen that the number of SME's that had contact with LSH in the past is larger than the number that have currently contact. Figure 8 shows the number of SME's that have visited the website of LSH. Eight SME's did not visit the website, three SME's did. In Figure 9, the way in which SME's are brought in contact with LSH is presented. In this graph can be seen that there are five manners in which SME's have heard of LSH. The most mentioned way is by personal mail. Other options that were mentioned are by a newsletter, by colleagues, by mouth to mouth conversations or by the Nyenrode Life Sciences & Healthcare Event.

Although it is important to understand the most effective way to communicate with the stakeholders, another important issue is the way in which stakeholders themselves prefer to stay in contact. In Figure 10, the most preferred ways are presented. Each SME had the ability to mark more than one option. Three options stand out; the newsletter, personal mail and the RSS feed. An RSS feed is a data format on the internet used for providing users with frequency updated content. Users have to subscribe to it to receive this content. In this way, users who have subscribed to the RSS feed are constantly informed about the latest updates of the website.

In Figure 11 is presented how often SME's want to be informed by LSH. Four options are mentioned, of which every month is most popular.

#### 7.1.1.5 The services needed by SME's

In the following section is shown which services are needed the most by SME's. In Table 31 it can be seen that the six most needed services are proportional rated on the coefficients of variation of the SME's. The first six services will be discussed, although not all services have a coefficient of variation beneath 0.50. This is done, because these services have a coefficient of 0.50 or lower when the score is rounded off, and the list of services is long. The six most needed services are financial support from the government, access to a library to obtain scientific literature, information about subsidies, news items about the sector, information about regulations and guidelines, and facts and figures about the sector.

Most highly rated services are financial support from the government and access to a library to obtain scientific literature. As mentioned before, financial support is needed in order to be able to continue the research projects of the SME's. Furthermore, access to a library helps SME's to keep up with the latest development in their field of research. Another important issue is the access to information about subsidies, regulations and guidelines. SME's have indicated that this information is widely spread over different places. What is missing is an overview of all subsidies, all regulations and all guidelines. Another service that is needed by the interviewed SME's is access to news items and facts and figures about the sector. News items are available, but not specifically about the Dutch companies. Fact and figures about the Dutch life sciences and health sector are presented at different places, and not complete. This is thought to be useful to attract foreign companies to collaborate with Dutch companies.

##### 7.1.1.5.1 Correlation coefficient of the services needed by SME's

The correlation between the mean and coefficient of variation of need for the services of SME's is almost perfect positive (Table 31). The less important the service is assessed, the less unanimous the stakeholders are about this service. The other way around, SME's are unanimous about important services.

#### 7.1.1.6 The vision of LSH held by SME's

In Table 32, the vision of LSH held by SME's is presented. It shows how the interviewed stakeholders think about LSH. In this table can be seen that there are 9 statements with both an extreme average score and a low coefficient of variation. The statements with an extreme high value are all positive, the extreme low rated statements are, except for one statement, all negative. This means that the stakeholders agree with the positive statements and disagree with the negative statements. The only exception is that SME's are not intended to make use of the education and training program of LSH. On the other hand, SME's think that they can benefit from LSH and that they think that they will make use of the services in the future. The overall feeling of the stakeholders is positive. Remarkable is that almost all stakeholders have indicated that it would be of benefit for the Netherlands to present the Dutch life sciences and health sector as a unity. On the other hand, the SME's indicate that it is less useful for their company itself. LSH is not seen as a competitor of or a threat of the interviewed SME's. Neither do the SME's provide comparable services.

It is not useful to analyze the relation between the mean and coefficient of variation for this dimension, because both negative and positive statements are presented to the SME's.

#### 7.1.1.7 Summary of the characteristics of SME's

The most important goals of SME's are gaining funding, networking and finding highly qualified employees. Totally not important goals are improving their business and academic skills. Three goals are achieved by SME's. These goals are networking and finding collaborating partners. Finding qualified employees is partly achieved by SME's. A lack of (continuity of) financial flows is the cause of the inability of SME's to fulfill their goals.

Financial support, the availability of partners to collaborate with and access to a library are factors that would potentially positively stimulate SME's. The availability of partners to collaborate with and access to a library are positively experienced by SME's.

SME's are not aware of the innovation program and LSH. They have heard of it, but they have no idea what they incorporate. The Nyenrode Event is seen as an opportunity to network. SME's prefer to be informed by LSH by personal mail and newsletters every month.

The services that SME's need the most are financial support from the government, access to a library and information about subsidies, news items, regulations and guidelines and facts and figures.

The overall feeling of SME's of the innovation program is positive. They think they can benefit from the program and do not see it as a threat.

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## 7.1.2 CHARACTERISTICS OF REGIONAL INITIATIVES

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In this section, the regional initiatives will be analyzed. This will be done in the same way as is done for the SME's; each dimension will be discussed, as well as the correlation coefficient of the mean score and the coefficient of variation and the comparison of two dimensions which are measured on the same list of indicators.

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### 7.1.2.1 The goals of RI's

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In Table 37, the goals of the regional initiatives are presented and categorized on their importance. The five goals with both an extreme positive mean score and a low coefficient of variation are networking, finding a collaborating partner, knowledge transfer to industry/other organization, funding and create awareness of researchers for commercialization. Each of those indicators are ranked as important for RI's.

Networking and finding collaborating partners are important goals for RI's. The main activity of the initiatives is to organize network meetings, in order to bring different partners together. The transfer of knowledge to industry or other organizations is associated with collaborations between organizations. This is not a direct goal of the regional initiatives, but it is an indirect result of the collaborations that is initiated by the network meetings. The RI's do not have profit objectives. Still, they need money to organize activities and to facilitate the organizations of their region. Therefore, funding is important for RI's.

#### 7.1.2.1.1 The correlation coefficient of the goals of RI's

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In Table 37 it can be seen that the ranking of the coefficient of variation is almost in line with the ranking of the average score. This means that the stakeholders are most unanimous about the most important goals, but have more divided opinions about less important indicators. The relation between the mean and the coefficient of variation is -0.99, which means that the relation between ranking and unanimity of the stakeholders is almost perfect positive.

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### 7.1.2.2 The barriers of RI's

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The barriers of the goals are discussed in this section. Table 38 presents the goals of RI's that are difficult to achieve. The most unanimous goals that are totally not achieved by the regional initiatives are the improvement of industrial skills and the movement to a foreign country. This is caused by the fact that regional initiatives are committed to a certain region. The improvement of industrial skills is totally not achieved, because regional initiatives do not commercialize themselves. Another goal that is totally not achieved is licensing. This is not achieved, because regional initiatives themselves do not have patents which they can license. This is not one of the activities of the initiatives and therefore totally not achieved. More important to understand is the low average mean of funding. This means that this is not achieved by the stakeholders. Reasons that the interviewed initiatives have given are the fact

that there are a lot of competitors in the same field, or in the same region. The initiatives therefore have to compete with each other for subsidies provided by the government. Another cause is the complexity of the subsidy rules and changing conditions. There are no goals of RI's that are ranked with an extreme high mean score. This means that there are no goals which are completely achieved.

The second part of the barriers is analyzed by the problems that cause the inability to fulfill the goals. These are presented in Table 39. The main reason for the inability to achieve the goals is a lack of continuity of financial flows. The continuity of financial flows is needed to continue the activities of the initiatives. Too little knowledge about business opportunities is mentioned as the second most important cause of the inability to fulfill the goals. This lack of knowledge is observed by the organizations in their network and not by the regional initiatives themselves.

On the other hand, there are two facts that are totally not the cause of the inability of regional initiatives to fulfill their goals. These facts are a shortage of partners to cooperate with and not having the right technology. The latter one is a logical result of the fact that regional initiatives do not have research and development projects, and therefore not need technologies which enable those projects. Regional initiatives themselves have indicated that they have enough cooperation partners in their network. Because networking is one of the main activities of the organizations, the number of organizations in their network is growing.

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#### 7.1.2.2.1 The correlation coefficient of the barriers of RI's

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In Table 38 it can be seen that the relation between the mean and the coefficient of variation of the unachieved goals is not perfect negative. This means that the stakeholders do not become more unanimous when the achievement of the goals diminishes. In other words, the RI's are in some cases unanimous about the inability to fulfill the goal. This can be seen in Table 38. The bottom three goals are totally not achieved, but the stakeholders are totally unanimous about those achievements.

On the other hand, in Table 39 it can be seen that the stakeholders are unanimous when the indicator is seen as a problem that causes the inability to fulfill the goals of the organization.

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#### 7.1.2.1.2.1 Differences between goals and the achievements of the goals

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In Table 45, the comparison is made between the importance of goals of regional initiatives and the achievement of those goals. There are five goals that are scored as important and are unanimously assessed by the regional initiatives. Those goals are networking, finding collaborating partners, transfer knowledge to industry, funding and creating awareness of researchers for commercialization. Of those goals, it will be analyzed whether the goals are achieved by RI's, by using a t-test.

In Table 46 can be seen that three of the comparisons are significant. These comparisons are between the importance and achievement of networking, finding a collaborating partner and creating awareness of researchers for commercialization. These goals are less achieved than desired. Of the remaining goals, this cannot be said, due to the fact that the comparisons are not significant.

### 7.1.2.3 The stimuli of RI's

There are three stimulating factors about which the regional initiatives are unanimous, which can be seen in Table 40. Those factors are awareness of the organization by other organizations, the availability of partners to collaborate with and financial support. First, regional initiatives benefit from a large network. To be able to support the sector, organizations in this sector must be aware of the initiative. The importance of the organization should be recognized. The initiatives are useful for their stakeholders, but not necessary. Acknowledgement of their stakeholders would benefit the regional initiatives. Partners are needed in order to be able to organize network meetings. Network meetings are the main activity of the regional initiatives. Without available partners, the initiatives cannot bring them together. Therefore, it is stimulating when the pool of partners is large. Finally, financial support would increase the success of the organization. As stated before, financing is needed in order to be able to organize activities. More funding provides more possibilities for new activities.

In Table 41 it can be seen which factors are positively experienced by the regional initiatives. The only factor that is positively experienced by RI's with a low coefficient of variation is the availability of partners to collaborate with. Financial support on the other hand is only partly achieved. All regional initiatives have gained financing, but this was not as much as they would like to receive. An argument that was given by some of the initiatives was that financial support from the government is too much focused on the support of SME's. Again, initiatives have mentioned the complexity of the subsidies as a barrier to gain financial support.

#### 7.1.2.3.1 The correlation coefficient of the stimuli of RI's

The relation between the mean and coefficient of variation of the potentially stimulating factors and the positively experienced factors is almost perfect positive, as presented in Table 40 and 41. This means that the stakeholders become less unanimous when the average ranking of the stimulating factors decreases. This accounts for both the factors with a stimulating effect on the performance of RI's, and the positively experienced factors.

#### 7.1.2.1.3.1 Differences between stimuli

In this section, the positively stimulating factors of regional initiatives and the level of experience of those factors by the initiatives are compared. Only the positively stimulating factors will be analyzed. Those factors are the awareness of the organization by others, the availability of partners to collaborate with and financial support. This comparison will be done

by using a t-test. The results are presented in Table 48. All comparisons are significant. This means that there is a difference between the positively stimulating effect of the indicator and the level in which the RI's have experienced this positive effect. The awareness of the organization by others, the availability of partners to collaborate with and financial support are less experienced by RI's than desired.

#### 7.1.2.4 Awareness of RI's of LSH

In this section, the awareness of regional initiatives of LSH and the innovation program is analyzed, as well as their preferences about the way they would like to communicate with LSH in the future. In Table 42 can be seen that all questions are unanimously answered by the RI's. Furthermore, it is shown that none of the questions has an extreme average value. The regional initiatives have indicated that they have heard of the innovation program, but that they did not make use of it. The initiatives are less aware of the services of LSH than of the innovation program itself.

The second measurement is the appearance of the regional initiatives at the Nyenrode Life Sciences & Healthcare Event. Six stakeholders did not go to the event. Of the four stakeholders that have been to the event, three were enthusiastic. They said that the event was useful to talk to important people in the sector and that it was a good opportunity to network.

In Figure 13, the number of regional initiatives that had contact with LSH in the past is presented. In this graph it can be seen that two organizations did not have personal contact and eight of them did have contact with LSH. The organizations have spoken with different people of LSH, and their experiences with these personal contacts varied between different organizations. Some organizations mentioned that they gained more understanding about the innovation program. Other organizations have indicated that the personal contacts did not lead to more insight.

Figure 14 shows the number of regional initiatives that visited the website of LSH. Three out of ten organizations did not visit the website. The reactions about the website varied. Some of the organizations mentioned that the website was structural and that information was easily found. Other initiatives indicated that the website made not clear what LSH incorporates and what LSH can do for their organization.

Figure 15 shows the ways in which regional initiatives were brought into contact with LSH. In this graph can be seen that the distribution of communication tools is widely spread. A conclusion that can be drawn from this is that there is not one tool that is most effective to inform regional initiatives for the first time. There are two tools that were most mentioned by the regional initiatives as way in which they were brought in contact with LSH. Those tools were by colleagues and by personal mail.

In Figure 16 and Figure 17, the preferences of the regional initiatives are graphically presented. The first graph shows the communication tools that were most preferred by the initiatives. In this graph can be seen that the stakeholders are divided about the way in which they would like to be informed. Most mentioned are by means of a newsletter and personal mail. The second graph shows the frequency in which they would like to be informed. The answers are divided, from every month to quarterly. Furthermore, stakeholders have indicated that they would like to be informed once there was information that would be useful to their organization. In that case, LSH should determine whether new information is important for the RI's.

#### 7.1.2.3.1 The correlation between the type of contact with LSH and the awareness of RI's of LSH

It is useful to understand whether contact with LSH, visiting the Nyenrode Event or visiting the website had influence on the awareness of the regional initiatives. This is presented in the table above. In this table can be seen that the Nyenrode Event had a negative influence on the awareness of the innovation program. This means that appearance at the Nyenrode event resulted in an unawareness about the innovation program. Furthermore, visits to the website have led to a positive relation with the awareness about the services of LSH and the possibilities to make use of the services. The same is applicable for the relation between personal contact with LSH and the awareness about the program bureau and the services of LSH. In this research, RI's which had personal contacts with LSH were more aware about the program bureau and the services of LSH than RI's that did not have personal contacts with LSH.

	Correlation coefficient of:			
	Innovation program	Program bureau LSH	Services	Make use of the services
Nyenrode Event	-0.14	0.20	0.34	0.34
Personal contact	0.44	0.74	0.62	0.62
Website LSH	0.22	0.39	0.68	0.68

#### 7.1.2.5 Services needed by RI's

In this section, the need for services of regional initiatives is analyzed. In Table 43, the most important services are on top of the list. The most needed services of regional initiatives are information about companies in the Netherlands, news items about the sector, facts and figures about the sector, financial support and information about subsidies. Remarkable is that four out of the five most important services are concerned with the provision of information. Regional initiatives are less concerned with services that require interaction between the initiatives and other organizations, for instance with a market place.

The RI's have indicated that information about companies in the Netherlands is most important to them. This is functional, because they can use this information for organizing network

meetings. Furthermore, RI's have indicated that they have a service character to support organizations of their network. Therefore, information about the subsidies, news items about the sector and facts and figures of the sector are not only useful for the initiatives themselves, but also for organizations of their network. Financial support from the government is a service of LSH in which the stakeholders are interested. RI's do not have the aim to become profitable, but need financing to be able to continue organizing activities. Most regional initiatives are public organizations and depend on governmental support. But for this service also applies that the governmental support is not only mentioned as advantage for the initiatives themselves, but also for the organizations of their network. They need financial support as well.

#### 7.1.2.5.1 The correlation coefficient of services needed by RI's

The unanimity of the stakeholders declines when the need for services becomes less important. This is presented in Table 43. The correlation coefficient is -0.99, which means that there is a perfect positive relation between the average ranking and the coefficient of variation of the services. The more important the service is for RI's, the more unanimous the RI's are.

#### 7.1.2.6 Vision of LSH held by RI's

In Table 44, the vision of LSH held by RI's is presented. In this table it can be seen that four statements are both ranked with an extreme high mean score and a low coefficient of variation. What can be seen is that the only negative statement that is assessed with a high average mean is that LSH provides comparable services as the regional initiatives. The overall vision of the initiatives about LSH is positive; they have the intention to make use of the services of LSH, they think that LSH can be useful to their organization and they trust the intentions of LSH to give the sector an impulse. The stakeholders are more neutral about the intentions of LSH to improve the innovation processes of the stakeholders and the aim to put their interests before the interests of the stakeholders. The interviewed initiatives have indicated that they first want to see the results before they can be more positive about it. The initiatives are most unanimous about this statement.

#### 7.1.2.7 Summary of the characteristics of RI's

The most important goals of RI's are networking, finding a collaborating partner, knowledge transfer to the industry, funding and creating awareness of researchers for commercialization. RI's have not achieved the improvement of their industrial skills, movement to a foreign country, licensing and funding. The cause of the inability of RI's to fulfill their goals was a lack of (continuity of) financial flows and too little knowledge about business opportunities. This inability was not caused by a shortage of partners to collaborate with or not having the right technology.

Potentially positively stimulating factors for RI's are the awareness of their stakeholders of the organization, the availability of partners to collaborate with and financial support. They have

experienced the availability of partners to collaborate with as positive. Financial support is partly experienced by RI's.

RI's have heard of the innovation program, but they did not make use of it. They prefer to be informed by LSH by personal mail or newsletters. The preferred frequency varies from every month to quarterly.

The services that are needed by RI's are information about companies in the Netherlands, news items of the sector, facts and figures, information about subsidies and financial support from the government.

The overall vision of RI's of the innovation program is positive. RI's provide comparable services as LSH.

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### 7.1.3 CHARACTERISTICS OF TECHNOLOGY TRANSFER OFFICES

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In this part of the chapter, the characteristics of TTO's will be discussed. This will be done in the same way as the analysis of the characteristics of SME's and RI's.

#### 7.1.3.1 The goals of TTO's

In Table 49, the goals of TTO's are presented. In this table it can be seen that almost all mean scores of the indicators are colored green. This means that the stakeholders have given extreme values to most of the indicators. Furthermore, the stakeholders are unanimous about the first eight goals. Those goals are licensing, create awareness of researchers for commercialization, patents, networking, improving business skills, transfer knowledge to industry/other organizations, increase the use of knowledge created by the organization and the discovery of a scientific breakthrough.

TTO's have mentioned licensing and patenting as the first and third most important goals of the organization. The aim of TTO's is to transfer knowledge from universities to the industry to create societal benefits. The means by which they try to do this is by detection of knowledge within universities and knowledge institutes, patenting this knowledge and licensing the knowledge to organizations that will benefit from the knowledge, or by starting new companies. Therefore, patenting and licensing is extremely important for TTO's. As result of those activities, transferring knowledge to the industry is an important goal of TTO's. This happens automatically when knowledge is licensed to other organizations, but it is also an aim of TTO's. They want to avoid that useful knowledge of knowledge institutes remains unused. This knowledge can create both economic and societal benefits and must therefore be transferred. The goal 'increase the use of knowledge within the organization' is connected with this goal. TTO's mean by this objective that they want to create value out of all useful patents that they possess.

Furthermore, TTO's want to increase the awareness of researchers for commercialization. This is necessary, because the researchers are the starting point of value creation. They do the research and without the knowledge that researchers create, economic or societal benefit from the knowledge is impossible. Researchers must be aware of the possibilities to patent their findings.

Networking is also important for TTO's. Several reasons are brought up as explanation for the importance of networking. First, the TTO's must know what is discovered by the researchers. Contact on a regular basis is needed to follow the latest discoveries. Furthermore, a large network increases the chance on useful knowledge that can be transferred to the industry. Trust of the researchers is needed in order to let the researcher present its findings. Another important aspect of networking is that the TTO's must be aware of the activities of organizations, in order to be able to connect the right researcher to the right knowledge or technology. The improvement of business skills is another goal of TTO's. Researchers are focused on doing research; business development is not embedded in their activities. But the TTO's differ in opinion about this subject. Some TTO's think that researcher must acquire more business skills, while other TTO's think that it is better to let the researcher do research, and find an entrepreneur to perform the activities related to the business. The last important goal of TTO's, about which they are unanimous, is the importance of the discovery of a scientific breakthrough. Although they do not discover the scientific breakthrough themselves, breakthroughs must be found constantly in order to be able to continue their work.

#### 7.1.3.1.1 The correlation coefficient of the goals of TTO's

In the Table 49 it can be seen that the correlation between the mean and the coefficient of variation of the goals of TTO's is -0.87. This means that the relation is almost perfect positive, and that the ranking of the coefficient of variation is almost in line with the reduction of the average score. In other words, TTO's become less unanimous when a goal is less important to them.

#### 7.1.3.2 Barriers of TTO's

In Table 50, the achievements of the goals of TTO's are presented. In this table it is shown which goals are difficult to achieve, and which goals are achieved by TTO's. The goal that is achieved by TTO's is patenting. The number of patents that is submitted by researchers to TTO's is increasing. A larger number of patents makes it possible for TTO's to license more knowledge. Other goals about which the TTO's are unanimous, but which are not completely achieved are licensing and transferring knowledge to the industry. These processes can be improved, so that more researchers can present their patents to the TTO's and the patents of the TTO's can be licensed to the industry more often. TTO's have indicated that the awareness of researchers for commercialization is partly achieved, as well as the discovery of a scientific breakthrough. Researchers have gained much more commercial insight than in the past. This is achieved due to

the foundation of TTO's. They have the task to create this awareness. The improvement of business skills is not achieved yet. Although researchers are better aware of the opportunities to make use of their knowledge in commercial ways, the way in which they have to take the steps to create those benefits are not understood completely.

Goals that are not achieved are profitability, improving academic skills, bringing products to the market, growth, improving industrial skills and moving to a foreign country. The TTO's are only unanimous about the latter goal.

The inability to fulfill the goals is caused by a lack of business skills, a lack of financial flows and the continuity of those flows, as can be seen in Table 51. Financially seen, the problem is not only that it is difficult to gain funds, but also that valorization is not embedded in universities and that these universities do not have a budget that can be used to structurally support the researchers with business activities. Furthermore, too little knowledge about business opportunities has a negative influence on the achievements of the goals, according to the interviewed TTO's.

Four factors that are totally not the cause of the inability to fulfill the goals are problems with patenting, no access to scientific papers, not being able to find the right collaborating partner and a shortage of networking capabilities. During the interviews, all TTO's have mentioned that they have access to literature. Patenting on the other hand is one of the main activities of TTO's. They help researchers with IPR, and have the skills to improve their support. Therefore, patenting is not a problem for the TTO's. TTO's have indicated that they have the ability to network with different types of organizations, and that there are enough partners to collaborate with. Those factors are not seen as barriers.

#### 7.1.3.2.1 The correlation coefficient of the barriers of TTO's

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The relation between the mean score and the coefficient of variation of the achievement of the goals of TTO's is presented in Table 50. Table 51 presents the correlation coefficient of the causes of the inability to fulfill the goals of TTO's. The correlation coefficient of -0,89 respectively -0,83 indicates that the TTO's become more unanimous when the goal is not achieved. The same applies for the causes of this inability; the less a factor is the cause of the inability to fulfill the goals, the less unanimous the TTO's are.

#### 7.1.3.1.2 Differences between goals and achievements of the goals

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In Table 57, the comparison is made between the importance of the goals of TTO's and the achievements of the goals of TTO's. The most important goals about which the TTO's are unanimous are compared with their scores for the achievement of those goals. By means of a t-test, it will be analyzed whether the important goals are achieved by TTO's. This is presented in Table 58. In this table can be seen that all comparisons are significant, except for patenting and improving business skills. Of Licensing, creating awareness of researchers for commercialization,

networking, transferring knowledge to the industry, increasing the use of knowledge created by the organization and discovering a scientific breakthrough it can be said that the importance of the goal is not in line with the level of achievement experienced by TTO's.

### 7.1.3.3 The stimuli of TTO's

The following section contains the stimulating factors of TTO's. Table 52 presents the factors with positive influences on TTO's. Three factors have a stimulating effect on TTO's; financial support, the availability of partners to collaborate with and the awareness of the organization by others.

Financial support is the most stimulating factor of TTO's. Funding is needed in order to be able to perform their activities. It is needed in order to be able to establish new organizations. The availability of partners to collaborate with is very important for TTO's. This factor is needed both by the TTO itself and by new corporations. TTO's need partners in order to transfer their patents to the most appropriate organizations. Furthermore, TTO's can benefit from the availability of partners, because they need their knowledge and patents.

For TTO's, it is important that researchers bring their patents to them. Without the patents of the researchers, TTO's are not able to bring knowledge of knowledge institutes to the industry. Therefore, they cannot perform the main activity of the organization. The awareness of others is therefore important, since those others are the source of activities and part of the financial gaining of TTO's. Furthermore, TTO's have to transfer patents to other organizations. According to the interviewed TTO's, this would be easier when those organizations are aware of the TTO's.

Access to a library is rated as totally not important for TTO's. This would not improve their performance.

In Table 53, it can be seen which factors are experienced by the interviewed TTO's as positive. In this table it can be seen that none of the factors is exclusively positively experienced by TTO's. Totally not positively experienced is an improved governmental legislation. Although valorization has been put on the agenda and this has resulted in more attention for TTO's, the regulation of subsidies is complex. Another part of the legislation that could be improved, according to the interviewed TTO's, is that the IPR of collaboration projects should be improved. This hampers small organizations in joining collaboration projects.

TTO's have indicated that they partly have experienced financial support, the availability of partners to collaborate with and the awareness of organizations by others. TTO's have received financial support, but often this was not enough to continuously finance their projects. The awareness of researchers can also be improved. This is already better than in the past, but still not all researchers present their findings to the TTO's. The TTO's have indicated that there are a lot of partners to collaborate with, but that is often difficult to create unity among the partners and to share a same vision.

#### 7.1.3.3.1 The correlation coefficient of the stimuli of TTO's

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In Table 52 it can be seen that the stakeholders do not become more unanimous when the factor is more stimulating. The correlation coefficient of  $-0.14$  implies that. On the other hand, the correlation coefficient of the experienced factors is  $-0.82$  (Table 53). This means that the stakeholders are more unanimous when stimulating factors are more intensely experienced.

#### 7.1.3.3.2 Differences between stimuli

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The differences in stimulating factors and experienced factors are presented in Table 59. Of the most positively stimulating factors, it will be analyzed whether those factors are positively experienced by means of a t-test. This is done for the factors financial support, the availability of partners to collaborate with and the awareness of the organization by others. This is presented in Table 60. The comparisons of financial support and awareness of the organization by others are both significant, in contrast with the comparison of the availability of partners to collaborate with and industrial sector initiatives. Therefore can be said that the positively stimulating effect of financial support and the awareness of the organization by others are not in line with the level in which TTO's have experienced them. In other words, these factors are less experienced by TTO's than desired.

#### 7.1.3.4 Awareness of TTO's of LSH

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In this section, the awareness of TTO's of the innovation program is presented. Besides that, their preferences regarding communication with LSH are presented. Table 54 presents the degree wherein the TTO's are aware of the innovation program and the services of LSH. The highest average score can be assigned to their awareness of the innovation program. The average score of 2.71 indicates that the stakeholders are aware of the innovation program, but that they did not yet make use of the program. The program bureau is less known. They have heard about them, but are not familiar with their activities. The same can be said of the awareness of the services of LSH and the possibility to make use of those services. TTO's have heard about it, but have no idea what they incorporates. TTO's have indicated that they are not aware about the content of the innovation program, and that the information that they have gained was more non-specific and not targeted to their needs. Furthermore, the information was too general, without pointing out the concrete actions of LSH.

Figure 18 presents the appearance of TTO's at the Nyenrode Event. In this graph it can be seen that three TTO's did not go to the Nyenrode event. Two out of four TTO's that went to the event did not think that the event was informative. The event was a good opportunity to network. Four TTO's did not have contact with LSH in the past; three of them did have contact. Four organizations have visited the website of LSH. Most of the TTO's that have visited the website thought that the information on the website was too little. The focus was not enough on the activities of LSH and the contribution of LSH to the improvement of the innovation and

investment climate. Figure 21 presents the ways in which TTO's have been brought in contact with LSH. Most of the time, this happened by colleagues.

The most preferred way to stay in touch with LSH is by a newsletter or by personal mail. They want to be informed when the information is useful for their organization or for their start-ups. TTO's do not want to receive information too often. The most preferred frequency is quarterly, but every one or two months is also mentioned by the TTO's.

#### 7.1.3.5 Services needed by TTO's

In Table 55, the need for services by TTO's is presented. In this table, it can be seen that the most important services of LSH are financial support from the government, information about companies in the Netherlands, facts and figures about the sector, news items about the sector, information about venture capitalists and information about regulations and guidelines. Remarkably, all important services have their focus on providing information or on gaining financial support (both from government and venture capitalists).

The TTO's are less enthusiastic about providing a market place to offer or find equipment, materials, and inventions. The TTO's have indicated that they have the skills to find the partner they need for themselves. The interviewed organizations do totally not need support to move a new location in the Netherlands or to move to a foreign country. TTO's are closely related to universities and UMC's. Their location is close to those organizations in order to be able to have close contact with researchers.

##### 7.1.3.5.1 The correlation coefficient of the services needed by TTO's

The importance of the services is not in line with the unanimity of the stakeholders, as presented in Table 55. This can be explained by the fact that TTO's were not only unanimous about the most important services, but also about services that are totally not useful to their organization.

#### 7.1.3.6 Vision of LSH held by TTO's

The vision of LSH held by TTO's is presented in Table 56. In this table it is shown to what extent the stakeholders agree with the statements. In the first column, P's and N's are presented in front of the statements. The P corresponds with positive statements, the N with negative once.

Stakeholders are most unanimous about and agree upon the statements to present the Dutch life sciences and health sector as a unity. They think that it would be beneficial for the Netherlands and for their organization. Overall, TTO's are positive about the innovation program and LSH; they trust the intentions and think that LSH could be beneficial for their organization. They do not see LSH as a threat or competitor of their organization. One negative statement on which they agree is that LSH provides comparable services as TTO's. Furthermore, TTO's are neutral about LSH regarding putting its own interests before those of the stakeholders.

### 7.1.3.7 Summary of the characteristics of TTO's

The most important goals of TTO's are licensing, creating awareness of researchers for commercialization, patenting, networking, improving their business skills, knowledge transfer to the industry, increasing the use of knowledge created by the organization and discovering a scientific breakthrough. Patenting is achieved by TTO's. Creating awareness of researchers for commercialization and discovering a scientific breakthrough is partly achieved. TTO's did not achieve licensing, transferring knowledge to the industry, profitability, improving their academic skills, bringing products to the market, growth, improving their industrial skills and moving to a foreign country. The inability of TTO's to fulfill their goals is caused by a lack of business skills, a lack of (continuity of) financial flows and too little knowledge about business opportunities. TTO's did not experience problems with patenting, a lack of access to scientific literature and networking as a cause of the inability to fulfill their goals.

Potentially stimulating factors are financial support, the availability of partners to collaborate with and awareness of their stakeholders of the organization. TTO's have negatively experienced improved governmental legislation as a stimulating factor.

TTO's are aware of the innovation program, but they did not make use of the program. The most preferred way to stay in touch with LSH is by a newsletter or personal mail. The most preferred frequency is quarterly, but every one or two months is also mentioned by the TTO's.

Services that are needed the most by TTO's are financial support from the government, information about companies in the Netherlands, facts and figures about the sector, news items about the sector, information about venture capitalist and information about regulations and guidelines.

The overall feeling of TTO's about the innovation program is positive. One negative statement is that LSH provides comparable services as TTO's.

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## 7.2 CHARACTERISTICS OF LIFE SCIENCES & HEALTH

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In this part of the chapter, the characteristics of LSH will be discussed. Of each dimension, the indicators with both an extreme value and a low coefficient of variation will be discussed, as explained in section 6.3.1.1. Furthermore, the comparison between dimensions which make use of the same indicators will be analyzed. This section gives an answer to the second sub research question: *What are the organizational characteristics and service characteristics of LSH?*

### 7.2.4.1 The goals of LSH

The goals of LSH became clear from the interviews, as well as from the corporate story, in which the vision of LSH is presented. For LSH, it is important to support the sector. That can be done via several actions. As presented in Table 61, six goals are most important for LSH. Those goals

are; creating partnerships in the sector, create business awareness from top students to executives, create unity in the sector, attract big foreign pharmaceutical companies to the Netherlands, make the Dutch life sciences and health sector a hotspot for investments and to gain commitment from stakeholders. All of those goals are highly ranked by LSH. By achieving those goals, it is possible to support the sector.

Less important for LSH is growth. It is not the aim of LSH to become larger, only to be able to serve the stakeholders as good as possible. If that is possible with the current size, growth is not needed. Becoming independent of the government is not an important goal for LSH. Although it would ensure the endurance of the innovation program, it is not necessarily needed to continue offering services.

Besides goals of its own, LSH also has objectives for its stakeholders. Those goals are presented in Table 62. The most important ones are to investigate what the hurdles are for their stakeholders, to increase the number of collaborations between stakeholders, to provide facts, figures and useful links, to simplify licensing and patenting, to find collaborating partners for stakeholders and to provide international support. Furthermore, LSH wants to attract top students to the Netherlands and has the aim to mediate in linking highly qualified personnel to stakeholders. Another important goal is to provide useful trainings.

In both tables can be seen that LSH is very unanimous about its goals and the goals towards the stakeholders. This can be explained by the fact that the purposes of the innovation program are defined in the 'corporate story'; the vision of LSH.

#### 7.2.4.2 Perception of LSH about the characteristics of the stakeholders

The perception of LSH shows what LSH thinks about the characteristics of its stakeholders. This perception is investigated for each stakeholder group individually. In the following sections, the perception of LSH about the goals, barriers, stimuli, awareness, services and vision characteristics of the three stakeholder groups are presented.

##### 7.2.4.2.1 Perception of LSH about the goals of stakeholders

The first perception of LSH that will be discussed is the perception about the goals of the stakeholders. Each of the goals is ranked by LSH. In that way, it is possible to denote which goals are important for the individual stakeholder groups, and which goals are less important, according to the vision of LSH.

##### 7.2.4.2.1.1 Perception of LSH about the goals of SME's

Table 63 shows the goals of which LSH thinks that they are important for SME's. Again, it can be seen that LSH is unanimous about most of the indicators. The most important goals for SME's according to LSH are bringing products to the market, profitability, funding, discovering a

scientific breakthrough, patent innovations, networking, find highly qualified personnel, license knowledge, finding collaborating partners, improving business skills and growth. LSH thinks that SME's do not have the need to move to a foreign country or to create awareness of researchers for commercialization.

#### 7.2.4.2.1.2 Perception of LSH about the goals of RI's

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LSH also has indicated to what agree they think that the same goals are important for RI's, conform Table 64. Only three goals are important for RI's, according to LSH. Those goals are networking, funding and creating awareness of researchers for commercialization. Remarkable is the latter goal was indicated as totally not important for SME's, but is ranked as important for RI's. Less important is profitability, moving to a foreign country, discovering a scientific breakthrough, bring products to the market, growth, the transfer of knowledge to the industry or other organizations, licensing and patenting.

#### 7.2.4.2.1.3 Perception of LSH about the goals of TTO's

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The perception of LSH about the goals of TTO's is presented in Table 65. The goals that are indicated as most important for TTO's are patenting, licensing and networking. Those goals are all ranked with a score of 5, and with unanimous answers. Furthermore, LSH thinks that it is important for TTO's to find collaborating partners, to transfer knowledge to the industry, the increase the use of knowledge created by the organization, to create awareness of researchers for commercialization, funding, discovering a scientific breakthrough and to find highly qualified personnel. Least important is to move to a foreign country.

#### 7.2.4.2.1.4 The correlation coefficients of the perception of LSH about the goals of stakeholders

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In Table 71, 72 and 73, it can be seen that the correlation between the coefficient of variation and the ranking of the goals are almost -1 for each stakeholder group. This means that LSH is most unanimous about the most important goals, and as the goal becomes less important, LSH is less unanimous. This accounts for all three stakeholder groups.

#### 7.2.4.2.2 Perception of LSH about the barriers of stakeholders

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In this section, the perception of LSH is presented about the barriers of its stakeholders. Both the goals that are difficult to fulfill will be presented, as well as the causes to the inability to fulfill the goals. This will be done for each group of stakeholders individually.

#### 7.2.4.2.2.1 Perception of LSH about the barriers of SME's

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In Table 66, the goals of SME's that are difficult to achieve are presented. Goals of SME's that are indicated by LSH as difficult to achieve are discovering a scientific breakthrough, funding, profitability and growth. There are two goals that are mentioned as easy achievable; networking

and finding a collaborating partner. According to LSH, SME's have enough capabilities to be able to build a network and to find collaborating partners within this network.

In Table 67, an overview is given of the importance and level of achievement of the goals of SME's according to LSH. In this table it can be seen that there are four goals which are ranked as important for SME's, but of which LSH expects that it will be difficult to achieve them. Those goals are profitability, funding, discovering a scientific breakthrough and growth. The goals that are both important and expected to be achieved are networking and finding a collaborating partner. Moving to a foreign country is ranked as not important and not achieved.

The problems that are expected to be the cause of the inability of SME's to fulfill the goals are presented in Table 72. For SME's, the main obstacles are a lack of financial resources and a continuity of them, a lack of highly qualified employees and access to them, legislation problems, stacking of subsidies and no flexibility in using foreground IP. According to LSH, SME's do not experience problems with finding collaborating partners, networking or having too little knowledge about research.

#### 7.2.4.2.2 Perception of LSH about the barriers of RI's

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Table 68 presents the goals that are expected to be difficult to achieve by RI's. In this table it can be seen that there are three goals of which LSH thinks that RI's are capable of achieving them. Those goals are networking, finding a collaborating partner and bring products to the market. Expected to be not achieved are moving to a foreign country, licensing and patenting, discovering a scientific breakthrough, growth, profitability, transferring knowledge to the industry and increasing the use of knowledge created by the organization.

In Table 69, the comparison between the perception of the most important goals and the expectation of LSH regarding the achievement of those goals is presented. Remarkable is that there is one goal which is totally not important for RI's, but is totally achieved. This goal is bringing products to the market. LSH thinks that this is not one of the main activities of RI's, but that they have no problems with it. Networking is a goal that is important and also achieved. Funding and creating awareness of researchers for commercialization are both important, but less expected to be completely achieved. On the other hand, finding a collaborating partner is not ranked with an extreme value, but is expected to be achieved easily. All other goals of which LSH expects it to be less important for RI's are also expected to be difficult to achieve.

Table 73 presents the causes of which LSH expects that they have influence on the ability to fulfill the goals. In this table it can be seen that there are no green colored indicators. This means that LSH thinks that there are no extremely important obstacles for RI's to achieve their goals. The highest ranked cause is a lack of cooperation partners, but this indicator is only ranked with a score of 2.8, which means that it is not very important.

#### 7.2.4.2.3 Perception of LSH about the barriers of TTO's

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According to LSH, there is only one goal that can be achieved easily by TTO's: networking. Goals that are expected to be difficult to achieve are: moving to a foreign country, discovering a scientific breakthrough, profitability, improving industrial skills, growth, bringing products to the market and funding. This is all presented in Table 70. In Table 71, the comparison between the importance of the goals and the expected achievement of the goals of TTO's is presented. In this overview it can be seen that there are two goals of which is expected that they are difficult to achieve, although they are important for TTO's. Those goals are funding and discovering a scientific breakthrough. Networking is ranked both important and achievable. Patenting and licensing are both ranked as extremely important for TTO's, but the expected level of achievement is noticeably lower.

The expected causes of the inability to fulfill the goals are presented in Table 74. The three most important causes are a lack of highly qualified employees and access to those employees and finally, TTO's are expected to have difficulties with finding collaborating partners. Totally not seen as a cause are no access to scientific papers and a shortage of networking capabilities. This implies that regardless of their capabilities to create a network collaborating partners cannot be found within this network according to LSH.

#### 7.2.4.2.4 The correlation coefficients of the perception of LSH about the barriers of stakeholders

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In Table 74, 76 and 78, the correlation coefficients are presented for the relation between the achievement of the goals and the ranking of the unanimity of LSH. For each stakeholder applies that the score is close to -1. This means that LSH is more unanimous about goals that are easy to achieve. Difficultly achieved goals cause divided answers by LSH. The same holds for the relation between the causes for the inability of stakeholders to fulfill the goals and the unanimity of LSH about those causes (Table 80, 81 and 82). Again, the relation between them is almost perfect positive. In other words, LSH is less divided about important causes and more divided about problems that are less harmful for the stakeholders. This is more or less the same for each of the stakeholder groups.

#### 7.2.4.2.3 Perception of LSH about the stimuli of stakeholders

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Besides the negative aspects that influence the performance of each of the stakeholders, LSH also has an idea about the positive influences on the stakeholders. In this section, the perception of LSH about stimulating factors will be presented, as well as the expected degree in which the stakeholders have experienced the factors. This will be done for each stakeholder group individually.

#### 7.2.4.2.3.1 Perception of LSH about the stimuli of SME's

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In Table 75 it can be seen that there are three factors of which LSH thinks that they have a positive influence on SME's. These factors are improved governmental legislation, financial support and the availability of partners to collaborate with. Also important is access to a library. There are no factors expected to have a negative influence on SME's.

According to LSH, there are two factors that are positively experienced by SME's. Those factors are the availability of partners to collaborate with and access to a library. This can be found in Table 76. Table 77 presents an overview of both stimulating and experienced factors. In this table it can be seen that LSH expects that both improved governmental legislation and financial support are more stimulating for SME's than experienced. On the other hand, the availability of partners to collaborate with is expected to be experienced as a stimulating factor, as well as access to a library.

#### 7.2.4.2.3.2 Perception of LSH about the stimuli of RI's

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The same is done for RI's, as presented in Table 78. There are four factors which are expected to have a positive influence on RI's; the availability of partners to collaborate with, awareness of the organization by others, financial support and industrial sector initiatives. For two factors, a positive influence is not expected. Access to a library and improved supplier relationships are not believed to contribute to a better performance of RI's. In Table 79, it can be seen that the four stimulating factors are also expected to be experienced by RI's. The comparison of the stimulating factors and experienced factors is shown in Table 80. This overview clearly demonstrates that there are not many differences between those two dimensions. The positive factors are rated high on the level of experience, and the factors that would not have a positive influence are not expected to be experienced. According to LSH, RI's have positively experienced the availability of partners to collaborate with, the awareness of the organization by others, financial support and industrial sector initiatives. Access to a library is both not indicated as a stimulating factor, and also scaled on a level of not experienced by RI's.

#### 7.1.4.2.3.3 Perception of LSH about the stimuli of TTO's

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Finally, the perceptions of LSH of the stimulating factors for TTO's are stated. For this stakeholder group, the availability of partners to collaborate with, an improved governmental legislation and the awareness of others about the organization are seen as important stimulating factors. It is expected that TTO's have positively experienced the availability of partners to collaborate with. This is the only factor that is rated with an extreme value by LSH. Awareness of others about the organization is the second most expected experienced factor. In Table 83, the comparison between both indicators is presented. In this table it can be seen that it is expected that improved governmental legislation is less experienced than desired. Furthermore, awareness by others is more or less expected to be experienced on the same level as it is expected to positively influence TTO's.

#### 7.2.4.2.3.4 The correlation coefficients of the perception of LSH about the stimuli of stakeholders

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In Table 83, 86, 89, 84, 87 and 90, the correlation coefficient between the importance of each dimension and the unanimity of LSH is presented. The first three tables are linked to the stimulating factors, the last three tables are linked to the level of experience of those factors. In the upper table can be seen that LSH agreed on the stimulating factors of RI's. This correlation coefficient is close to -1, which means that LSH is more divided as the importance of the stimulating factors declines. The same can be said about the correlation between the expected levels of experience for all three stakeholder groups. The correlation coefficient of stimulating factors for SME's and TTO's are less close to -1. This means that LSH was more unanimous about the most stimulating factors of RI's than of SME's and TTO's.

#### 7.2.4.2.4 Perception of LSH about the awareness of stakeholders of the innovation program

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In this section will be shown to what extent LSH thinks that the stakeholders are aware of the innovation program and its services. Furthermore, it will be presented what the expected way was in which they came in contact with LSH, and what their preferences are.

##### 7.2.4.2.4.1 Perception of LSH about the awareness of SME's of the innovation program

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The expected awareness of SME's is rated low by LSH. LSH expects that SME's are not aware of the innovation program or LSH, and certainly not about the services of LSH and the possibility for them to make use of the innovation program. This is presented in Table 84. Presumed is that SME's are brought in contact with LSH by newsletters, links on other websites and by face to face contact. LSH thinks that personal mail and newsletters would be the preferred ways to stay in touch, and that SME's would like to receive information every month or two months (see Figure 24, Figure 25 and Figure 26).

##### 7.2.4.2.4.2 Perception of LSH about the awareness of RI's of the innovation program

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The presumed awareness of RI's is rated higher than the awareness of SME's. In Table 85, it can be seen that RI's are expected to be completely aware of the innovation program and the program bureau LSH. The services of LSH are expected to be less known. Figure 27, Figure 28 and Figure 29 present the expected preferences of RI's. In these graphs it can be seen that LSH presumes that RI's are brought in contact with LSH by face to face contact and by newsletters. Furthermore, links on other websites could have increased the awareness of RI's. The same counts for RI's as for SME's; it is believed that RI's want to be kept informed by personal mail and newsletters every month or two months.

counts for RI's as for SME's; it is believed that RI's want to be kept informed by personal mail and newsletters every month or two months.

#### 7.2.4.2.4.3 Perception of LSH about the awareness of TTO's of the innovation program

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Table 86 presents the suspected awareness of TTO's. TTO's are thought to be moderately aware of the innovation program, which means that they have heard of the program but did not make use of it. The program bureau is less known, as well as the services of LSH and the possibility to make use of the services. It is thought that TTO's have heard of LSH by colleagues and mouth to mouth contact with other actors in the field, and by links on other websites. For TTO's, the same preferences are expected; it is thought that they want to be informed by LSH every months to two months by newsletters or personal mail.

#### 7.2.4.2.5 Perception of LSH about the need for services of stakeholders

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This section will present the perception of LSH about the need for its services of stakeholders. For each stakeholder will be determined to what degree LSH presumes what the need is for each of its services.

##### 7.2.4.2.5.1 Perception of LSH about the need for services of SME's

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Table 87 shows which services are expected to be needed by SME's. In this table it can be seen that there are some services that are presumed to be highly needed, while other services are on the bottom of the list. According to LSH, SME's would benefit from information about companies in the Netherlands, subsidies, regulations and guidelines and venture capitalists, access to a company database, financial support, news items about the sector, facts and figures about the sector and access to a database to obtain competitive advantage. Totally not needed are access to a library to obtain scientific literature or to find incubators and a market place to offer or find equipment and support to open a new location in the Netherlands.

##### 7.2.4.2.5.2 Perception of LSH about the need for services of RI's

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Table 88 presents the expected need for services of RI's. For RI's, access to a company database of the Netherlands, information about companies in the Netherlands, facts and figures about the sector, information about regional initiatives, sharing facilities, education and trainings in the field of business skills, subsidies, regulation and guidelines, and news items about the sector are indicated by LSH as important and needed. Furthermore, the possibility to advertise the organization, support for movement to a foreign country or to open a new location in the Netherlands, access to a library and a market place to offer or find equipment or materials are all presumed not to be beneficial for RI's.

#### 7.2.4.2.5.3 Perception of LSH about the need for services of TTO's

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The presumed need for services by TTO's is presented in Table 89. TTO's are expected to benefit from information about venture capitalists, access to a company database, to a database for product information, for finding venture capitalists, for patent information, for finding collaborating partners and for competitive intelligence, information about companies in the Netherlands, regulations and guidelines and subsidies, financial support from the government, news items about the sector and information about education and trainings in the field of business skills. Less beneficial would be support to open a new location in the Netherlands or to move to foreign countries, the possibility to advertise the organization, access to a library or a market place to offer or find materials or equipment.

#### 7.2.4.2.6 Perception of LSH about the vision of LSH held by stakeholders

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The final perception characteristic of LSH that is presented is the perception about the vision of the stakeholders. Of each stakeholder, the presumed vision towards the innovation program and LSH is given.

##### 7.2.4.2.6.1 Perception of LSH about the vision of LSH held by SME's

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The main impression that LSH has of SME's, is that SME's would agree on the fact that they could benefit from presenting the Dutch life sciences sector as a unity. Furthermore, LSH thinks that SME's could benefit from the innovation program, but would survive without it as well. It is presumed that SME's do not think that LSH would put its own interests before the interests of the stakeholders. Furthermore, SME's will likely not see LSH as a threat or competitor of the organization. Overall, LSH thinks that SME's have a positive feeling about the innovation program. An overview of all statements and the scores that are given to those statements can be found in Table 90..

##### 7.2.4.2.6.2 Perception of LSH about the vision of LSH held by RI's

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Less positive is thought about the vision of RI's. It is presumed that LSH would provide the same services as RI's, and that RI's see LSH as a competitor. Furthermore, RI's are not expected to make use of the education and training program provided by LSH. However, LSH does not only have a negative perception of the vision of RI's. It is expected that RI's are positive about the fact that the Dutch life sciences and health sector should be presented as a unity. Furthermore, it is not thought that RI's have the feeling that LSH would put its own interests before those of others. Table 91 shows the perception of LSH towards the vision of RI's.

##### 7.2.4.2.6.3 Perception of LSH about the vision of LSH held by TTO's

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As presented in Table 92, LSH is less pronounced about the vision of TTO's. Only two statements are ranked with an extreme score. It is expected by LSH that TTO's have a positive feeling

towards presenting the sector as a unity and that they do not think that LSH would put its own interests on front. The other statements are neutrally rated by LSH. This means that LSH thinks that TTO's have a neutral opinion about the statement.

#### 7.2.4.3 Services of LSH

In this section, the same list of services is presented as in the previous section. Of those services, LSH has indicated which services they are considering to offer to the stakeholders and which not. This list of services is presented in Table 93. LSH considers offering or already offers the following services: access to a company database of the Netherlands, information about companies in the Netherlands, venture capitalists, regulations and guidelines, subsidies, education and trainings in the field of business skills and about regional initiatives, financial support from the government, facts and figures about the sector, news items about the sector and access to a database to gain competitive advantage or to find venture capitalists.

Services which are not considered are providing access to a library to obtain scientific literature, support for moving to a foreign country, a market place to offer or find equipment or materials or the possibility to advertise a company or organization.

#### 7.2.4.4 Summary of the characteristics of LSH

The most important goals of LSH are creating partnerships in the sector, create business awareness from top students to executives, create unity in the sector, attract big foreign pharmaceutical companies to the Netherlands, make the Dutch life sciences and health sector a hotspot for investments and gain commitment from stakeholders. Furthermore, LSH has the aim to investigate what the hurdles are for their stakeholders, to increase the number of collaborations between stakeholders, to provide facts, figures and useful links, to simplify licensing and patenting, to find collaborating partners for their stakeholders and to provide international support.

The most important goals of SME's according to LSH are bringing products to the market, profitability, funding, discovering a scientific breakthrough, patent innovations, networking, finding highly qualified employees, license knowledge, finding collaborating partners improving business skills and growth. The most important goals of RI's according to LSH are networking, funding and creating awareness of researchers for commercialization. For TTO's, LSH has indicated that patenting, licensing and networking are the most important goals.

Goals that are achieved by SME's according to LSH are networking and finding a collaborating partner. Difficult to achieve are discovering a scientific breakthrough, funding, profitability and growth. The cause of the inability to fulfill the goals of SME's are a lack of (continuity of) financial flows, a lack of highly qualified employees, legislation problems, stacking of subsidies and no flexibility in using foreground IPR.

For RI's, LSH has indicated that networking, finding a collaborating partner and bringing products to the market are easy to achieve. On the other hand, LSH has indicated that RI's have difficulties with licensing and patenting, discovering a scientific breakthrough, growth, profitability, transferring knowledge to the industry and increasing the use of knowledge created by the organizations. According to LSH, there are no extremely important obstacles for RI's to achieve their goals.

For TTO's, LSH has indicated that networking is easily achieved by TTO's. Moving to a foreign country, discovering a scientific breakthrough, profitability, improving industrial skills, growth, bringing products to the market and funding is difficult to achieve. LSH thinks that this is caused by a lack of (access to) highly qualified employees and difficulties with finding collaborating partners.

According to LSH, potentially stimulating factors for SME's are improved governmental legislation, financial support and the availability of partners to collaborate with. For RI's, stimulating factors are the availability of partners to collaborate with, awareness of their stakeholders of the organization, financial support and industrial sector initiatives, and for TTO's, the availability of partners to collaborate with, improved governmental legislation and the awareness of their stakeholders of the organization are seen by LSH as potentially stimulating factors.

According to LSH, SME's have positively experienced the availability of partners to collaborate with and access to a library. RI's have positively experienced the availability of partners to collaborate with, the awareness of their stakeholders of the organization, financial support and sector initiatives. Finally, TTO's are expected to have positively experienced the availability of partners to collaborate with.

The perception of LSH of the awareness of the stakeholders differs between the stakeholder groups. SME's are expected to be unaware of the innovation program, the awareness of RI's are expected to be completely aware of the innovation program and TTO's are expected to be moderately aware, without making use of the program. For all stakeholder groups holds that LSH expects that they want to be informed by LSH every month or two months by personal mail or newsletters.

According to LSH, SME's would benefit from information about the companies in the Netherlands, subsidies, regulations and guidelines and venture capitalists, access to a company database, financial support, news items about the sector, facts and figures and access to a database to obtain competitive advantage. RI's are expected to benefit from the same services, with an addition of information about regional initiatives, sharing facilities and education and training programs in the field of business skills. Finally, LSH thinks that TTO's could benefit from information about venture capitalists, access to a company database, to a database for product information and finding venture capitalists, for patent information, for finding collaborating

partners and for competitive intelligence, information about companies in the Netherlands, regulations and guidelines and subsidies, financial support, news items about the sector and information about education and training programs.

LSH thinks that SME's have an overall positive feeling about the innovation program and that RI's are less positive. TTO's are expected to be neutral.

The most important services that LSH has considered to offer to the stakeholders are access to a company database of the Netherlands, information about companies in the Netherlands, venture capitalists, regulations and guidelines, subsidies, education and training programs and about regional initiatives, financial support from the government, facts and figures about the sector, news items and access to a database to gain competitive advantage or to find venture capitalist.

### 7.3 ASYMMETRY PROBLEMS BETWEEN LSH AND THE STAKEHOLDERS

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In this section, the asymmetry problems between LSH and the stakeholders are analyzed. Each asymmetry problem is analyzed separately and for each stakeholder group individually. This section will give an answer to the third sub research question: *What are the similarities and differences in organizational and service characteristics between LSH and the stakeholders?*

#### 7.3.1 ASYMMETRY PROBLEMS BETWEEN LSH AND SME'S

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The first step of the analysis is analyzing the differences between LSH and SME's. This will be done for each asymmetry problem individually; goal asymmetry, perception asymmetry and service asymmetry.

##### 7.3.1.2 Goal asymmetry between LSH and SME's

For the goal asymmetry between LSH and SME's, it will be analyzed whether the goals of LSH are in line with the goals of the SME's. Since LSH has different goals for itself than for its stakeholders, not all goals can be compared. Table 94, 95, 96 and 97 present the goals that will be compared between LSH and the stakeholders. First, the differences between LSH and SME's will be analyzed.

Table 94 and Table 96 present the differences in goals of LSH and goals of SME's. In these tables can be seen that growth is less important for LSH than for SME's. LSH wants to create partnerships while finding a collaborating partner is less important for SME's. Furthermore, LSH wants to create business awareness, but SME's do not want to improve their business skills. Besides that, LSH has the aim to provide training programs to stakeholders, but SME's do not have the aim to improve their business, academic or industrial skills. Finally, international

support is not needed by SME's, in contrast with the goals of LSH to provide international support.

Similarities in goals between LSH and SME's are that networking is important for SME's and LSH wants to create partnerships. SME's want to find highly qualified employees and LSH has the aim to support this by attracting top students to the Netherlands and by mediating by linking highly qualified employees to stakeholders. Furthermore, LSH wants to increase the number of collaborations while SME's have the aim to network.

The second part of the goal asymmetry between LSH and SME's shows the differences between the goals of LSH and the achievement of those goals by SME's. The only goal on which they agree is creating partnerships by networking of SME's. SME's have indicated that they are able to network, and thereby can contribute to the goals of LSH. A difference between LSH and SME's is that creating business awareness is one of the most important goals of LSH, but that this is not achieved by SME's.

### 7.3.1.3 Perception asymmetry between LSH and SME's

In the perception asymmetry will be examined what the differences and similarities are between the perception of the dimensions of LSH and the actual situation experienced by SME's. This is done for each dimension individually and will be discussed in sections 7.3.1.3.1 to 7.3.1.3.6.

#### 7.3.1.3.1 Goal perception asymmetry between LSH and SME's

In Table 98, the differences between the perception of LSH about the goals of SME's and the actual goals of SME's is presented. Differences between LSH and SME's are that improving business and academic skills is ranked as less important by SME's than expected by LSH. Furthermore, bringing products to the market, discovering a scientific breakthrough, patenting, licensing, finding a collaborating partners and profitability are rated extremely high by LSH but as less important by SME's.

There are also similarities between LSH and SME's. These are the goals of which SME's have indicated that they are important and the perception of LSH is in line with goals of SME's. Funding, networking and finding qualified employees are both by LSH and SME's rated as important. Moving to a foreign country is ranked low by both.

#### 7.3.1.3.2 Barrier perception asymmetry between LSH and SME's

The barrier perception asymmetry shows the differences between the perception of LSH about the barriers of SME's and the barriers that SME's have experienced. This asymmetry is divided into two parts; the first part shows the goals that are not achieved by SME's (Table 99), the second part contains the causes of the inability to fulfill those goals (Table 100).

Licensing, improving business, industrial and academic skills, increasing the use of knowledge created by the organization, transferring knowledge to the industry, and creating awareness of researchers for commercialization are less achieved by SME's than presumed by LSH. Furthermore, LSH thought that SME's were capable of finding collaborating partners, but SME's have only partly achieved that.

There are also similarities between LSH and SME's about the achievements of the goals by SME's. Networking is both by LSH and SME's indicated as achieved. Difficult to achieve, and acknowledged by both LSH and SME's, are growth, profitability, funding, moving to a foreign country and discovering a scientific breakthrough.

LSH and SME's differ in perception of what the causes are of the inability to fulfill the goals. According to LSH, a lack of (access to) highly qualified employees, legislation problems, stacking of subsidies/grants and no flexibility of using foreground IPR are the causes of the inability of SME's to fulfill their goals. According to SME's, these factors are not the cause.

LSH and SME's agree on the factors that were not the causes of the inability to fulfill the goals. Not able to finding collaborating partners, not enough cooperation partners, a shortage of networking capabilities or too little knowledge about research are both by LSH and SME's indicated as factors that are not the causes of difficulties. Furthermore, both LSH and SME's have indicated that a lack of (continuity of) financial resources is the cause of the inability of SME's to fulfill the goals.

In Table 101, the main differences between LSH and SME's are presented. Profitability, bringing products to the market, funding and discovering a scientific breakthrough are indicated by LSH as goals that are important but not achieved, while funding is the only of those four goals that are indeed not achieved by SME's. For SME's on the other hand, it is difficult to transfer knowledge to the industry, while LSH thought this would be easy to achieve with respect to its importance.

#### 7.3.1.3.3 Stimuli perception asymmetry between LSH and SME's

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The third perception asymmetry is the stimuli perception asymmetry. The differences between LSH and SME's about their perception of stimulating factors is analyzed, as well as the level at which SME's have experienced the factor and LSH thinks they have experienced it. In Table 102, the factors with a positively stimulating effect on SME's are presented. In Table 103, the factors that are positively experienced by SME's are shown.

Factors about which LSH and SME's differ in opinion about their positive effect on SME's is improved governmental legislation. This factor is rated higher by LSH than by SME's as stimulating factor. Access to a library is more stimulating for SME's than expected by LSH. Awareness of their stakeholders of the organization has a less positive effect on the performance of SME's than expected by LSH.

LSH and SME's agree on the positively stimulating effect of financial support and the availability of partners to collaborate with.

Factors about which LSH and SME's differ in opinion regarding the level at which they are positively experienced by SME's are the awareness of their stakeholders, improved supplier relationships, improved governmental legislation and industrial sector initiatives. These factors are less beneficial for SME's than expected by LSH. Access to a library and the availability of partners to collaborate with are positively experienced by SME's, as expected by LSH.

#### 7.3.1.3.4 Awareness perception asymmetry between LSH and SME's

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The awareness perception asymmetry shows the differences and similarities between the perception of LSH about the awareness of SME's of the innovation program. LSH and SME's differ in opinion about the awareness of SME's. This is rated lower by LSH than the actual awareness of SME's is. Personal mail was the main tool to be brought in contact with LSH, not colleagues, face to face contact or links on other websites as was expected by LSH. SME's would prefer to be kept informed during events and less often than LSH expected. However, SME's and LSH have the same vision on the way SME's want to stay in touch: by newsletters and personal mail. Both the differences and similarities between LSH and SME's can be found in Table 105, Figure 39, and Figure 41.

#### 7.3.1.3.5 Service perception asymmetry between LSH and SME's

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The service perception asymmetry is presented in Table 106. The differences are that some of the services are rated as more important by LSH than by SME's. Those services are information about companies in the Netherlands, regulations and guidelines, subsidies, venture capitalists, education and training and services providers, access to a database to gain competitive advantage, product information or to find venture capitalists, and facts and figures and news items about the sector, access to a company database of the Netherlands, and the possibility to offer or find services that the organization needs. Services that are not needed by SME's and not considered to offer to SME's by LSH are access to a database to find incubators or service organizations, a market place to find or offer equipment or materials and support to open a new location in the Netherlands. Financial support is important for SME's, and acknowledged by LSH.

#### 7.3.1.3.6 Vision perception asymmetry between LSH and SME's

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In Table 107, the vision perception asymmetry is presented. In this table it can be seen that LSH has a more negative perception of the vision of SME's of the innovation program than that they actually have. SME's think that they can benefit from the program, will make use of the program, trust the intentions and think the objective will bear fruit. More negative than expected is the degree on which SME's are planning to make use of the education and training program of LSH and the degree at which they think to benefit from presenting the sector as a unity. Furthermore, it can be seen that there are also similarities between LSH and SME's on the

vision perception asymmetry. Like LSH expected, SME's do not provide comparable services, they do not see LSH as a threat or competitor of their organization and they do not think that LSH puts its own interests before the interests of the stakeholders.

#### 7.3.1.4 Service compatibility between LSH and SME's

The final asymmetry between LSH and SME's is the service compatibility, as presented in Table 108. The need for services provided by LSH and the provision of services by LSH differ both in services which are offered by LSH and not needed by SME's, and services which are not offered by LSH, but needed by SME's. Services that are provided by LSH, but not needed by SME's are access to a company database, information about companies in the Netherlands or about venture capitalists, regulations and guidelines, access to a database to find venture capitalists, information about education and trainings in the field of business skills and about regional initiatives. Access to scientific literature is more needed by SME's than considered to be offered by LSH.

A similarity between LSH and SME's concerning the provision of and the need for services is financial support. This is the only service that is offered by LSH and needed by SME's. Furthermore, they both agree that a market place to offer or find materials, equipment, licenses or partners would not be beneficial.

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### 7.3.2 ASYMMETRY PROBLEMS BETWEEN LSH AND RI'S

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In this section, the same will be done as in section 7.3.1, but now applied to the regional initiatives. The three asymmetry problems as presented on the left side in Figure 3 will be analyzed here.

#### 7.3.2.1 Goal asymmetry between LSH and RI's

The differences and similarities in goals between LSH and RI's can be found in Table 96 and Table 97. In these tables it can be seen that there are differences in goals between them. First, LSH wants to improve business awareness, while RI's do not have that aim and did not succeed in it. Second, LSH has the aim to provide training programs, but RI's do not have plans to make use of it. Finally, LSH wants to attract top students to the Netherlands and mediate between employees and industry by linking them together. Finding qualified employees is not a goal of RI's. Therefore, RI's and LSH do not correspond with each other on this goal.

Similarities in goals between LSH and RI's are that networking is important for RI's and LSH wants to create partnerships. Furthermore, LSH has the aim to increase the number of collaborations and RI's have the aim to network.

### 7.3.2.2 Perception asymmetry between LSH and RI's

In this section, the differences in perception of LSH and the actual situation experienced by RI's will be compared. This will be done for differences in goals, barriers, stimuli, awareness, services and vision. Both the similarities and differences between LSH and RI's are presented.

#### 7.3.2.2.1 Goal perception asymmetry between LSH and RI's

Table 109 presents the goal perception asymmetry between LSH and RI's. Goals of which their opinion differs are finding highly qualified employees and improving academic and industrial skills. These goals are not important for RI's, in contrast with the perception of LSH. Goals that are more important for RI's than expected by LSH are transferring knowledge to the industry and finding a collaborating partner.

Funding, networking and creating awareness of researchers for commercialization are both by LSH and RI's rated as important. Moving to a foreign country, licensing, patenting, discovering a scientific breakthrough and profitability are ranked low by both.

#### 7.3.2.2.2 Barrier perception asymmetry between LSH and RI's

The barrier perception asymmetry between LSH and RI's is measured on differences between them concerning goals that are difficult to achieve and the causes of the inability to fulfill the goals. In Table 110, the perception of LSH about the goals that are difficult to achieve by RI's, and the actual goals that are difficult achieved by RI's are compared. LSH and RI's differ in opinion about bringing products to the market, networking and finding a collaborating partner. These goals are more difficult to achieve than expected by LSH.

Difficult to achieve, and acknowledged by both LSH and RI's, are growth, profitability, moving to a foreign country, discovering a scientific breakthrough and licensing and patenting.

In Table 112, the causes of the inability to fulfill the goals are presented. LSH did not indicate a specific problem that would cause the inability of RI's to fulfill the goals. RI's have indicated that a lack of continuity of financial flows is the cause of their inability to fulfill the goals, which is not recognized by LSH.

LSH and RI's agree on the factors that are not the cause of the inability of RI's to fulfill the goals. These factors are a lack of (access to) highly qualified employees, not being able to find service partners or to transfer knowledge to other organizations, a lack of financial resources, too little knowledge about business opportunities, no access to the progress of competitors, no flexibility in using foreground IPR, too little knowledge about research, problems with licensing and patenting, a shortage of networking capabilities, no access to scientific papers or not having the right technology.

#### 7.3.2.2.3 Stimuli perception asymmetry between LSH and RI's

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The stimuli perception asymmetry measures whether stimulating factors are rated on the same level by RI's as presumed by LSH (Table 113). Furthermore, the same will be done for the level at which RI's have experienced those factors (Table 114). There is only one factor of which LSH expected that it was more positively stimulating for RI's than that RI's have indicated. This factor was the influence of industrial sector initiatives. Factors about which they agree regarding the positive effects on RI's are the availability of partners to collaborate with, the awareness of others towards the organization and financial support. Access to a library and improved supplier relationships are classified low by both.

The awareness of their stakeholders of the organization, industrial sector initiatives and financial support are less positively experienced by RI's than expected by LSH. Furthermore, improved governmental legislation, improved supplier relationships and education and training were expected to be more positively experienced by RI's. The availability of partners to collaborate with is the only positive factor that is positively experienced by RI's and predicted to be positively experienced by LSH. Access to a library was by both RI's and LSH indicated as a factor that would not have been positively experienced by RI's.

#### 7.3.2.2.4 Awareness perception asymmetry between LSH and RI's

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LSH estimated the awareness of RI's about the innovation program too high. RI's were less aware of the innovation program and LSH, but more aware of the services of LSH than expected. Personal mail and colleagues caused the awareness of RI's, not face to face contact or the newsletter. On the other hand, LSH and RI's agree on the preferences of RI's to stay in touch with LSH; every month to two months by newsletters or personal mail. The awareness perception asymmetry between LSH and RI's can be found in Table 116, Figure 42, Figure 43 and Figure 44.

#### 7.3.2.2.5 Service perception asymmetry between LSH and RI's

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Table 117 presents the service perception asymmetry between LSH and RI's. Services that are rated more important by LSH than by SME's are information about regulations and guidelines, education and training, sharing facilities and regional initiatives access to a company database of the Netherlands.

LSH and RI's agree on services about information about companies in the Netherlands, facts and figures about the sector, financial support from the government, news items about the sector and information about subsidies. These services are both by LSH and RI's indicated as important. They also agree that the possibility to advertise, support to open a new location in the Netherlands or to move to a foreign country, access to a library, calls for proposals and a market place to offer or sell equipment is not useful for RI's.

#### 7.3.2.2.6 Vision perception asymmetry between LSH and RI's

In Table 118, the vision perception asymmetry between LSH and RI's is presented. In this table it can be seen that LSH has a more negative perception about the vision of RI's towards the innovation program than that they actually have. RI's think they can benefit from the program, will make use of the program, trust the intentions and think the objective will bear fruit. More negative than expected is the degree at which RI's are planning to make use of the education and training program of LSH and the degree at which they think to benefit from presenting the sector as a unity.

Both LSH and RI's agree on the fact that RI's provide comparable services, and that it is useful for the Netherlands to present the Dutch life sciences and health sector as a unity.

#### 7.3.2.3 Service compatibility between LSH and RI's

The final asymmetry problem that is measured between LSH and RI's is the service compatibility presented in Table 108. Services that are provided by LSH, but not needed by SME's are access to a company database, information about companies in the Netherlands of about venture capitalists, regulations and guidelines, access to a database to find venture capitalists, information about education and training programs in the field of business skills and about regional initiatives. On the other hand, access to scientific literature is more needed by RI's than considered to offer by LSH.

There are also services on which they agree. Information about companies in the Netherlands, financial support from the government, facts and figures about the sector, news items about the sector and information about subsidies are services that are needed by RI's and considered to be offered by LSH. In contrast, support to open a new location in the Netherlands or to move to a foreign country, the possibility to advertise and a market place to offer or find equipment or materials are not important for RI's and not considered to be offered by LSH.

### 7.3.3 ASYMMETRY PROBLEMS BETWEEN LSH AND TTO'S

The final analysis that will be done between LSH and the stakeholders is between LSH and the TTO's. The goal asymmetry, perception asymmetry and service compatibility of between those actors is discussed.

#### 7.3.3.1 Goal asymmetry between LSH and TTO's

In this section, the goal asymmetry between LSH and TTO's will be discussed. In Table 94, 95, 96 and 97, the asymmetries are presented. In these tables it can be seen that there are both differences and similarities between LSH and TTO's. A difference between them is that LSH wants to provide education and training programs, but that the TTO's are only interested in improving business skills and not in improving academic or industrial skills. They have a similar

view about the aim to improve business awareness. LSH wants to create partnerships, and TTO's have the aim to create networks and, to a smaller extend, to find collaborating partners. Growth is unimportant for both of them. Licensing and patenting is important for TTO's and LSH has the aim to simplify this.

### 7.3.3.2 Perception asymmetry between LSH and TTO's

In this section, the perception asymmetry between LSH and TTO's will be analyzed for their differences in goals, barriers, stimuli, awareness, services and vision.

#### 7.3.3.2.1 Goal perception asymmetry between LSH and TTO's

In Table 119, the goal perception asymmetry can be found. In this table it can be seen that the perception of LSH and the indication of TTO's about the importance of the goals differ for finding collaborating partners, funding and finding qualified employees. These goals are less important for TTO's than presumed by LSH. On the other hand, improving business skills is more important for TTO's than expected by LSH.

Licensing, patenting, networking, creating awareness of researchers for commercialization, increasing the use of knowledge created by the organization, transferring knowledge to the industry and discovering a scientific breakthrough are by both LSH and TTO's indicated as important goals. Moving to a foreign country is by both indicated as totally not important.

#### 7.3.3.2.2 Barrier perception asymmetry between LSH and TTO's

Table 120 presents the barrier perception asymmetry between LSH and TTO's. The level of achievement of the goals of TTO's and the perception of LSH about this achievement is shown. The table shows both similarities and differences between them. Differences are that networking is less achieved by TTO's than expected by LSH, in contrast with patenting, which is more often achieved than presumed. Moving to a foreign country, profitability, improving industrial skills, growth and bringing products to the market are both by LSH as by TTO's indicated as difficult to achieve.

LSH thought that a lack of (access to) highly qualified employees and not being able to find the right collaborating partner were the cause of the inability to fulfill the goals of TTO's. TTO's on the other hand did not mention these factors as the cause of the inability to fulfill the goals. They have indicated that a lack of financial resources, continuity of financial flows and a lack of business skills were the cause of the inability to fulfill their goals, while this is not acknowledged by LSH. Both LSH and TTO's have indicated that a shortage of networking capabilities and no access to scientific papers are not the cause of the inability to fulfill the goals of TTO's. This can be seen in Table 122.

#### 7.3.3.2.3 Stimuli perception asymmetry between LSH and TTO's

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Table 123 presents the stimuli perception asymmetry. Improved governmental legislation is presumed to be more stimulating for TTO's, than TTO's have indicated. In contrast, financial support is more important for TTO's than expected by LSH. The availability of partners to collaborate with and the awareness of their stakeholders of the organization are by both LSH and TTO's indicated as stimulating factors.

The levels at which the stimulating factors are actually experienced are presented in Table 124. In this table it can be seen that improved governmental legislation, improved supplier relationships and education and training were expected to be more positively experienced by TTO's. Furthermore, the availability of partners to collaborate with is less positively experienced by TTO's than assumed by LSH.

#### 7.3.3.2.4 Awareness perception asymmetry between LSH and TTO's

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In Table 126, Figure 45, Figure 46 and Figure 47, the awareness perception asymmetry between LSH and TTO's is presented. Here it can be seen that TTO's are more aware about the services of LSH than expected by LSH. The number of times TTO's want to receive information from LSH is less often than presumed by LSH. The expected awareness of TTO's about the innovation program and LSH matched the actual situation. LSH and TTO's agree on the fact that TTO's would like to be kept informed by newsletters and personal mail.

#### 7.3.3.2.5 Service perception asymmetry between LSH and TTO's

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Table 127 presents the service perception asymmetry between TTO's and LSH. The differences and similarities in the need for services of TTO's and perception about this need are shown. Services that are less needed by TTO's than expected by LSH are access to a company database of the Netherlands, access to a database for product information, competitive intelligence, venture capitalists or patent information, the possibility to find services on the website of LSH that TTO's need, and information about education and training programs. Services on which LSH and TTO's agree are information about venture capitalists, companies in the Netherlands, regulation and guidelines, facts and figures about the sector, financial support of the government and news items about the sector. These are services of which LSH and TTO's agree that it would be useful for TTO's. They also agree that support to open a new location in the Netherlands or to move to a foreign country, advertising their organization, a market place to offer or find materials or equipment and access to a library would not contribute to a better performance of the TTO's.

#### 7.3.3.2.6 Vision perception asymmetry between LSH and TTO's

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The final perception asymmetry is the vision perception asymmetry between LSH and TTO's. This can be found in Table 128. In this table it can be seen that LSH expected that TTO's would

be more negative than they are. All positive statements are assessed higher by TTO's, and all negative statements are assessed lower. Other differences are that TTO's make more use of comparable services of other organizations and that they are more negative about the fact that LSH would put its interests before those of stakeholders than presumed by LSH. Both LSH and TTO's agree on the statement that it would be useful for the Netherlands to present the Dutch life sciences and health sector as a unity to foreign countries.

### 7.3.3.3 Service compatibility between LSH and TTO's

The final asymmetry problem that will be analyzed between LSH and its stakeholders is the service compatibility between LSH and TTO's. In Table 108, it can be seen that LSH considers to provide services that are needed by TTO's, but that there is also a service which is considered to be offered but not needed by TTO's. This service is the possibility to find services of other organizations on the website of LSH that is totally not needed by TTO's. Information about companies in the Netherlands, venture capitalists and subsidies, regulations and guidelines, news items about the sector, financial support from the government and facts and figures about the sector are services of LSH that are needed by TTO's. The possibility to advertise, support to open a new location in the Netherlands or to move to a foreign country and a market place to find equipment and materials are services that are not considered to be offered by LSH, and not needed by TTO's.

### 7.3.3.4 Summary of the results on the asymmetry problems between LSH and the stakeholders

The summary of the results on the asymmetry problems between LSH and the stakeholders are presented in the following tables. In each table, the differences and similarities between LSH and each of the stakeholder groups is presented.

TABLE 15 GOAL ASYMMETRY

	Less important for stakeholder than for LSH	Important for stakeholder and LSH
<b>SME's</b>	Finding collaborating partner, improving business skills, education and training programs	Networking, finding highly qualified employees
<b>RI's</b>	Improving business skills, education and training programs, finding qualified employees	Networking, increase number of collaborations
<b>TTO's</b>	education and training programs	Improving business awareness, networking, creating partnerships, find collaborating partners

TABLE 16 GOAL PERCEPTION ASYMMETRY

	More important for stakeholder	Less important for stakeholder than expected by LSH	Important for stakeholder and expected by LSH	Not important for stakeholder and expected by LSH

than expected by LSH				
<b>SME's</b>	-	Improving business and academic skills, bringing products to the market, discovering a scientific breakthrough, patenting, licensing, finding a collaborating partners and profitability	funding, networking, finding highly qualified employees.	Moving to a foreign country
<b>RI's</b>	transferring knowledge to the industry, finding a collaborating partner	finding highly qualified employees, improving academic and industrial skills	Funding, networking, creating awareness of researchers for commercialization	Moving to a foreign country, licensing, patenting, discovering a scientific breakthrough and profitability
<b>TTO's</b>	improving business skills	finding collaborating partners, funding and finding qualified employees	Licensing, patenting, networking, creating awareness of researchers for commercialization, increasing the use of knowledge created by the organization, transferring knowledge to the industry and discovering a scientific breakthrough	Moving to a foreign country

TABLE 17 BARRIER PERCEPTION ASYMMETRY – ACHIEVEMENT OF THE GOALS

	Better achieved by stakeholder than expected by LSH	Less achieved by stakeholder than expected by LSH	Achieved by stakeholder and expected by LSH	Not achieved by stakeholder and expected by LSH
<b>SME's</b>	Finding qualified employees	Licensing, improving business, industrial and academic skills, increasing the use of knowledge created by the organization, transferring knowledge to the	Networking	growth, profitability, funding, moving to a foreign country and discovering a scientific

		industry, and creating awareness of researchers for commercialization, finding collaborating partners		breakthrough
<b>RI's</b>	-	bringing products to the market, networking and finding a collaborating partner	-	growth, profitability, moving to a foreign country, discovering a scientific breakthrough and licensing and patenting
<b>TTO's</b>	patenting	Networking	-	Moving to a foreign country, profitability, improving industrial skills, growth and bringing products to the market

Table 18 BARRIER PERCEPTION ASYMMETRY – causes of the inability of stakeholders to fulfill the goals

	More important cause for stakeholder than expected by LSH	Less important cause for stakeholder than expected by LSH	Important cause for stakeholder and expected by LSH	Not important cause for stakeholder and expected by LSH
<b>SME's</b>	-	a lack of (access to) highly qualified employees, legislation problems, stacking of subsidies/grants and no flexibility of using foreground IPR	a lack of (continuity of) financial resources	Not enough cooperation partners, a shortage of networking capabilities, too little knowledge about research
<b>RI's</b>	a lack of continuity of financial flows	-	-	a lack of (access to) highly qualified employees, not being able to find service partners or to transfer knowledge to other organizations, a lack of financial resources, too little knowledge about business opportunities, no access to the progress of competitors, no flexibility in

				using foreground IPR, too little knowledge about research, problems with licensing and patenting, a shortage of networking capabilities, no access to scientific papers or not having the right technology
<b>TTO's</b>	a lack of financial resources, continuity of financial flows and a lack of business skills opportunities	a lack of (access to) highly qualified employees and not being able to find the right collaborating partner	-	a shortage of networking capabilities and no access to scientific papers

TABLE 19 STIMULI PERCEPTION ASYMMETRY – POTENTIALLY POSITIVE STIMULATION FOR STAKEHOLDER

	More potentially positive factor for stakeholder than expected by LSH	Less potentially positive factor for stakeholder than expected by LSH	Positive factor for stakeholder and expected by LSH
<b>SME's</b>	Access to a library	Improved governmental legislation and the awareness of their stakeholders of the organization	Financial support, the availability of partners to collaborate with
<b>RI's</b>	-	industrial sector initiatives	the availability of partners to collaborate with, the awareness of others towards the organization and financial support
<b>TTO's</b>	financial support	Improved governmental legislation	availability of partners to collaborate with and the awareness of their stakeholders of the organization

TABLE 20 STIMULI PERCEPTION ASYMMETRY - POSITIVELY EXPERIENCED BY STAKEHOLDERS

	Less positively experienced factor for stakeholder than expected by LSH	Positively experienced factor for stakeholder and expected by LSH
<b>SME's</b>	awareness of their stakeholders, improved supplier relationships, improved governmental legislation, industrial sector initiatives	Access to a library, the availability of partners to collaborate with
<b>RI's</b>	The awareness of the organization of their stakeholders, industrial sector initiatives and financial support, improved governmental legislation, improved supplier relationships and education and training	Availability of partners to collaborate with
<b>TTO's</b>	improved governmental legislation, improved supplier relationships and education and training, the availability of partners to collaborate with	-

*Awareness perception asymmetry:* SME's are more aware of the innovation program and LSH than expected by LSH. LSH and SME's have both indicated that personal mail and newsletters are the most preferred communication tools. SME's want to be informed by LSH less often than expected. Furthermore, SME's want to gain information of LSH during events, in contrast with the perception of LSH.

LSH estimated the awareness of RI's about the innovation program too high. LSH and RI's agree on the preferences of RI's to stay in touch with LSH; every month to two months by newsletters or personal mail.

TTO's are more aware about the services of LSH than expected by LSH. The number of times TTO's want to receive information from LSH is less often than presumed by LSH. The expected awareness of TTO's about the innovation program and LSH matched the actual situation. LSH and TTO's agree on the fact that TTO's would like to be kept informed by newsletters and personal mail.

TABLE 21 SERVICE PERCEPTION ASYMMETRY

	Less important service for stakeholder than expected by LSH	Important service for stakeholder and expected by LSH	Not important services for stakeholder and expected by LSH
<b>SME's</b>	information about companies in the Netherlands, regulations and guidelines, subsidies, venture capitalists, education and training and services providers, access to a	Financial support from the government	access to a database to find incubators or service organizations, a market place to find or offer equipment or materials

	database to gain competitive advantage, product information or to find venture capitalists, and facts and figures and news items about the sector, access to a company database of the Netherlands, and the possibility to offer or find services that the organization needs		and support to open a new location in the Netherlands
<b>RI's</b>	information about regulations and guidelines, education and training, sharing facilities and regional initiatives access to a company database of the Netherlands	information about companies in the Netherlands, facts and figures about the sector, financial support from the government, news items about the sector and information about subsidies	the possibility to advertise, support to open a new location in the Netherlands or to move to a foreign country, access to a library, calls for proposals and a market place to offer or sell equipment
<b>TTO's</b>	access to a company database of the Netherlands, access to a database for product information, competitive intelligence, venture capitalists or patent information, the possibility to find services on the website of LSH that TTO's need, and information about education and training programs	information about venture capitalists, companies in the Netherlands, regulation and guidelines, facts and figures about the sector, financial support of the government and news items about the sector	support to open a new location in the Netherlands or to move to a foreign country, advertising their organization, a market place to offer or find materials or equipment and access to a library

TABLE 22 VISION PERCEPTION ASYMMETRY

	More positive feeling than expected by LSH	Less positive feeling than expected by LSH	Positive feeling and expected by LSH
<b>SME's</b>	Overall feeling	The education and training program of LSH	No comparable services, LSH is not seen as a threat or competitor
<b>RI's</b>	Overall feeling	The education and training program of LSH	-
<b>TTO's</b>	Overall feeling	-	-

TABLE 23 SERVICE COMPATIBILITY

	Important service for stakeholder but not offered by LSH	Important service for LSH but not needed by stakeholder	Important service for stakeholder and LSH
<b>SME's</b>	Access to scientific literature	access to a company database, information about companies in the Netherlands or about venture capitalists, regulations and guidelines, access to a database to find venture capitalists, information about education and trainings in the field of business skills and about regional initiatives	financial support
<b>RI's</b>	access to scientific literature	access to a company database, information about companies in the Netherlands of about venture capitalists, regulations and guidelines, access to a database to find venture capitalists, information about education and training programs in the field of business skills and about regional initiatives	Information about companies in the Netherlands, financial support from the government, facts and figures about the sector, news items about the sector and information about subsidies
<b>TTO's</b>	-	possibility to find services of other organizations on the website of LSH	Information about companies in the Netherlands, venture capitalists and subsidies, regulations and guidelines, news items about the sector, financial support from the government and facts and figures about the sector

#### 7.4 ASYMMETRY PROBLEMS BETWEEN STAKEHOLDERS

In the former section, the differences between LSH and each of the stakeholders is presented. In this section, the asymmetry problems between different stakeholders are analyzed. This means that the differences for each asymmetry problem are discussed between SME's, TTO's and RI's. Each asymmetry problem will be analyzed regarding differences in most important indicators between the groups. Furthermore, differences in dimensions with the same indicators between the groups will be measured.

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#### 7.4.1 GOAL ASYMMETRY BETWEEN STAKEHOLDERS

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The goal asymmetry between the three stakeholder groups is presented in Table 129. A goal that is important for all stakeholders is networking. Other goals are only important for one or two stakeholder groups. Funding is important for SME's and RI's. Finding highly qualified personnel is more important for SME's than for RI's and TTO's. In contrast, creating awareness of researchers for commercialization is ranked as important for TTO's and RI's, but not for SME's. Licensing and patenting is more important for TTO's than for SME's, and RI's have indicated that it is totally not important. Transferring knowledge to industry or other organizations is important for RI's and TTO's. The improvement of business skills is only important for TTO's. Finally, finding collaborating partners is ranked much higher by RI's than by the other two stakeholders.

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#### 7.4.2 BARRIER ASYMMETRY BETWEEN STAKEHOLDERS

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The barrier asymmetry between the different stakeholders shows which goals were more difficult to achieve for one stakeholder group than for other groups. This can be seen in Table 130. Networking and finding collaborating partners are the best achieved goals for SME's, while RI's and TTO's only partly have achieved these goals. For TTO's, patenting is the best achieved goal, while this is not achieved by RI's and SME's. Bringing products to the market is not achieved by all stakeholders, as well as improving business, industrial and academic skills, profitability and moving to a foreign country. Funding is totally not achieved by SME's and RI's and only partly achieved by TTO's. Transferring knowledge to industry or other organizations is important for TTO's and RI's, but RI's and TTO's did not achieve this goal completely, SME's did not achieve this goal at all. Creating awareness of researchers for commercialization is important for RI's and TTO's, and not for SME's. Both RI's and TTO's did not achieve this goal.

The problems that have caused the inability to fulfill the goals are presented for all stakeholder groups in Table 131. In this table can be seen that a lack of (continuity of) financial flows is an important cause for all stakeholder groups. This is the main and only reason for all three stakeholder groups of not achieving their goals.

7.4.2.1 Comparison of goals and achievements of goals
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Table 137 presents the differences between the stakeholder groups in the importance of the goals and achieving their goals. The column 'differences' shows the differences in average score between the importance of the goal and the achievement of the goal. The larger the difference, the less the goal is achieved. On the other hand, a negative value for the difference means that the goal is more achieved than that it is indicated as important.

Funding is an indicator that is less achieved by all stakeholders than they desired. The largest difference is found for SME's. They have indicated that funding is most important, but they did

not achieve this goal. The same applies for regional initiatives. They have not gained as much funding as they would have wanted. There are fewer problems with funding for TTO's. Another indicator that is not achieved by SME's and RI's is bringing products to the market. For SME's, this indicator was denoted as important, but they totally were totally not able to bring the products to the market. For RI's on the other hand, bringing products to the market was less important. This is because RI's do not bring products to the market themselves, but acknowledge the problems with it experienced by their members.

Finding a collaborating partner is variably assessed by the different groups. SME's have achieved this goal completely. RI's on the other hand did not achieve it as much as they wanted to achieve it. The same applies for TTO's. They have indicated that finding collaborating partners is important, but they also only partly achieved this. The same is true for networking. Networking is important for all stakeholders, but SME's are the only one who are able to achieve this goal. According to TTO's and RI's, networking can be improved. Profitability is not important for RI's and TTO's. For SME's on the other hand, profitability is more important and less achieved.

Transferring knowledge to industry is acknowledged as most important by both RI's and TTO's. For SME's, this is less important. Still, all of the groups have a high score on the difference. Especially SME's and RI's did not achieve this goal. TTO's have indicated that they have partly achieved it. For TTO's, transferring knowledge to the industry is their main objective. Therefore, it is not remarkable that this goal is best achieved by this stakeholder group. RI's also have the aim to transfer knowledge, but they did not achieve this. The difference between RI's and TTO's is that TTO's actively try to transfer knowledge by licensing knowledge, while RI's depend on the activities of their members.

Creating awareness of researchers for commercialization is the most remarkable goal of this list. Both RI's and TTO's have indicated that this goal is very important. Both groups also have indicated that this goal is not achieved. The difference in importance and achievement is large. SME's on the other hand do not see the need for this. This could be an explanation for the inability of RI's and TTO's to achieve this goal, because researchers can be found, among other organizations, in SME's. Without the insight of those researchers of this urgency, it is difficult for RI's and TTO's to achieve it.

Improving business skills is not achieved by all groups. Again, TTO's have indicated that this goal is extremely important and SME's do not acknowledge this importance. Researchers do not recognize the importance of business skills. When researchers do not acknowledge this importance, they will not try to improve it. Therefore, it is difficult for TTO's to achieve this goal, because they need collaboration of researchers to achieve this.

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### 7.4.3 STIMULI ASYMMETRY BETWEEN STAKEHOLDERS

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In Table 138, the factors with a positive influence of each stakeholder group are presented, as well as the level in which the factors are positively experienced by the stakeholders. The differences between those to measurements are presented in the column 'differences'. A high positive score means that the stakeholders did not experience the factor, while the factor could have a positive effect on the organization.

Financial support is important for all stakeholders, but all groups only have achieved it partly. Access to a library is only important for SME's, and they have indicated that they have access to libraries, although often illegal. The availability of partners to collaborate with would have a positive influence on all three types of stakeholders. TTO's did not experience this completely, in contrast with RI's and SME's.

Finally, the awareness of their stakeholders of the organization is important for RI's and TTO's, in contrast with SME's. Both RI's and TTO's have indicated that this stimulating factor is less experienced than desired.

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### 7.4.4 AWARENESS ASYMMETRY BETWEEN STAKEHOLDERS

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In Table 24 below, the correlations between the type of contact and the awareness of the stakeholders about the innovation program and LSH is presented. In this table it can be seen that the influence of the type of contact on the awareness of the stakeholders differs between the stakeholders. For SME's, the Nyenrode Event had a negative effect on their awareness. This means that the stakeholders that went to the event were less aware of the innovation program than stakeholders that did not go to the event. The Nyenrode event had a most positive correlation with the awareness of TTO's.

Personal contact contributed the most to the awareness for all groups of stakeholders. This means that stakeholders that had personal contact with LSH in the past are more aware of the innovation program and LSH. Furthermore, personal contact contributed to awareness of the services of LSH and the possibility to make use of those services.

Visiting the website has a variably correlation with the awareness for different types of stakeholders. For SME's, the website does not contribute to a higher awareness. They have indicated that they could not find everything they were looking for and that a lot of information was missing. On the opposite, visiting the website increased the awareness of the services of LSH for RI's. The same happened with TTO's, their awareness grew when they had visited the website.

There are three communication tools that were most effective to bring the stakeholders in contact with LSH. Those tools were personal mail, by colleagues and by face to face contact. Again, the personal mail refers to personal contact. In the table below it can be seen that

personal contact is the most effective way of creating more awareness. Personal mail is therefore recommended. Especially SME's prefer this personal contact. Colleagues and face to face conversations have also contributed to the awareness about the innovation program. This means that the stakeholders received information from others. The image of LSH is important when stakeholders are communicating with each other about LSH, because it has influence on what stakeholders tell each other. It would be beneficial for LSH if this is positive.

Two most preferred ways to stay in touch are newsletters and personal mail. These two communication tools are most commonly mentioned by all stakeholder groups. Another tool that is especially often mentioned by SME's is information provision during events. Each of the stakeholder groups have indicated that they want to be informed every month to every quarter. The preferred frequency is most often for SME's and RI's, and TTO's prefer to receive information less often. Remarks of all stakeholders are that they only want to receive information in times when it is useful for their organization. Generally, the groups of stakeholders agree about the frequency of communication.

Table 24 Correlation between awareness and contact

	Innovation program	LSH	Services	Use services		Innovation program	LSH	Services	Use services		Innovation program	LSH	Services	Use services
<b>SME</b>														
nyenrode event	-0,10	0,20	-0,08	-0,08	<b>RI</b>	-0,14	0,20	0,34	0,34	<b>TTO</b>	0,50	0,04	0,50	0,50
personal contact	0,67	0,66	0,61	0,64	personal contact	0,44	0,74	0,62	0,62	personal contact	0,65	0,26	0,65	0,65
website LSH	-0,19	0,10	0,03	-0,09	website LSH	0,22	0,39	0,68	0,68	website LSH	0,71	0,19	0,26	0,26

## 7.45 SERVICE ASYMMETRY BETWEEN STAKEHOLDERS

Table 135 presents the differences in need for services by different types of stakeholders. Compared to SME's and TTO's, RI's do not need many services. The three stakeholders groups are more or less unanimous about the most important and least important services. Financial support is needed by all stakeholders. Information about companies in the Netherlands is important to TTO's and RI's, and less for SME's. In contrast, SME's have the need of access to a library, while this is totally not important for RI's and TTO's. For all stakeholders, information about subsidies, facts and figures and news items is important.

Most of the services preferred by the stakeholders are dealing with providing information. More active services, like market places to find or offer equipment or knowledge are not needed by any type of stakeholder.

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#### 7.4.6 VISION ASYMMETRY BETWEEN STAKEHOLDERS

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Generally, it can be said that all stakeholders are positive about LSH. The positive statements are ranked with a high average score and the negative statements are ranked with a low average score. This can be seen in Table 136; the green squares are linked with positive statements and the red squares are linked with negative statements. The three stakeholder groups are in line with each other for most of the statements about LSH. Generally, they are all positive about the innovation program. The only exception is the vision of RI's on the provision of comparable services. The only negative statement that is acknowledged by all stakeholders, and especially by RI's, is that LSH puts its own interests before the interests of its stakeholders. Furthermore, LSH and RI's both provide services which are comparable.

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#### 7.4.7 SUMMARY OF RESULTS ON ASYMMETRY PROBLEMS BETWEEN STAKEHOLDERS

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*Goal asymmetry:* Networking is the only goal that is important for all three stakeholder groups. All other goals are only important for one or two stakeholder groups. Funding is more important for SME's and RI's, transferring knowledge to the industry and creating awareness of researchers for commercialization is more important for RI's and TTO's than for SME's.

*Barrier asymmetry:* There are no goals that are achieved by all stakeholder groups. Goals that are difficult to achieve by all stakeholder groups are bringing products to the market, improving business, industrial and academic skills, profitability and moving to a foreign country. A lack of (continuity of) financial flows is an important cause for all stakeholder groups. This is the main and only reason for all three stakeholder groups of not achieving their goals.

*Stimuli awareness:* financial support is important for all stakeholders, but only partly achieved by all groups. Access to a library is only important for SME's and also experienced. The availability of partners to collaborate with has a positive influence on all three stakeholder groups, but only achieved by RI's and SME's. The awareness of their stakeholders of the organization is important for RI's and TTO's, in contrast with SME's.

*Awareness asymmetry:* Personal contact contributed the most to the awareness for all groups of stakeholders. Visiting the website did not contribute to a higher awareness of SME's, in contrast with RI's and TTO's. Personal mail, by colleagues and by face to face contact were the most effective tools to bring all stakeholder groups in contact with LSH. Two most preferred ways to stay in touch are newsletters and personal mail for all stakeholder groups. Each of the stakeholder groups have indicated that they want to be informed every month to quarterly.

*Service asymmetry:* financial support is needed by all stakeholders as well as information about subsidies, facts and figures and news items.

*Vision asymmetry:* Generally, it can be said that all stakeholders are positive about LSH. The only negative statement that is acknowledged by all stakeholders, and especially by RI's, is that LSH

puts its own interests before the interests of its stakeholders. Furthermore, LSH and RI's both provide services which are comparable.



## 8. DECLINING THE ASYMMETRY PROBLEMS

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In this chapter, suggestions for reducing the asymmetry problems will be presented. The asymmetry problems are the basis of these suggestions. The suggestions are divided in ways to raise the awareness of stakeholders of the innovation program, LSH functioning as lobby, providing information and services, improve the image of LSH, activities in which LSH should not interfere and suggestion on how to improve the awareness for commercialization.

### 8.1 RAISE THE AWARENESS OF STAKEHOLDERS

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The awareness asymmetry showed that the awareness of the stakeholders of the innovation program is extremely low. To be able to support the stakeholders, the stakeholders have to know how they can benefit from the program. In addition, they have to know where to find information and how to contact LSH. The following suggestions show steps that has to be taken to increase the awareness of the stakeholders.

- The awareness asymmetry showed that the stakeholders that have visited the website are more aware about the program than stakeholders that did not. Therefore, stakeholders have to be tempted to visit the website. Links on other websites related to LSH can increase the number of visitors. Besides that, the website should be clearly announced on business cards and the newsletter. During events and network meetings, those business cards and flyers could be presented and stakeholders could actively be approached to visit the website.
- Personal contact with LSH has led to a higher awareness of the innovation program. It can be concluded that personal contact is the most effective way to make stakeholders aware of the innovation program. During events and network meetings, representatives of LSH should be present and actively approach the stakeholders. The message must be that stakeholders can always contact LSH with any question and that they do not have to hesitate to ask their question or tell their suggestions.
- Stakeholders have indicated that they only want to receive information when it is relevant for their organization. Therefore, news in the newsletters relevant for certain stakeholders should be indicated in stakeholder-specific email updates. Stakeholders have indicated that newsletters with too less useful information or to often presented will only be read partial or not at all.
- The Nyenrode Event had a negative influence on the awareness of SME's and RI's of the content of the innovation program. In other words, stakeholders of those two groups

- who visited the event did know less about the program than stakeholders who did not go. The most often mentioned reason for this was the general nature of the meeting, without specification on one problem or one target group. In the future, this should be avoided by inviting specific target groups and by offering different programs during the day. Stakeholders must have the feeling that they learn something new and that they are involved. A general program makes it impossible to satisfy all the stakeholders. Demarcation of the subjects discussed during the events could improve this.
- Visiting the website only improves the awareness of TTO's. For SME's, the website has an opposite effect. In other words, the website confuses SME's more than that it is useful to understand the content of the innovation program. To improve this, the website should contain more concrete information about the innovation program and the advantages it will bring to SME's when they make use of the program and visit the website. In other words, the website should be focused more on the users of the website and less on presenting LSH.

## 8.2 LSH FUNCTIONING AS LOBBY

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The barrier and stimuli asymmetry showed that stakeholders have difficulties in achieving some of their goals. LSH can support these stakeholders by functioning as lobby. The following suggestions present activities in which LSH could interfere as lobby.

- The barrier asymmetry showed that funding is important for all stakeholder groups, but not achieved by one of them. Especially SME's have difficulties with gaining financial support. A lot of stakeholders have mentioned the complexity of subsidy guidelines. The barriers of gaining subsidies should be mapped. LSH can act as a lobby to submit those obstacles of the stakeholders to policy makers. Through consultations between LSH, policy makers and stakeholders should be investigated if and how the complexity of the subsidies can be eased.
- Besides gaining financial support from the government, venture capitalists are an important source of financing for SME's. Venture capitalists and SME's should be stimulated to communicate with each other in order to understand the financial problems of SME's and the possibilities of venture capitalists to fund the operations of SME's. By communicating with each other, there could be searched for a solution. Again, LSH can function as an intermediary. It can bring the right actors together, and if needed, it can function as referee during the discussion. In this way, all involved stakeholders can tell their problems and together, a solution can be found.
- Finding qualified personnel is important for SME's, but is only partly achieved. For LSH, mediation in finding qualified employees is one of its goals. LSH can therefore interfere

- and support SME's. Difficulties are the ratio of the number of qualified personnel and the number of vacancies. Furthermore, the educational level of personnel is a hampering factor. In other words, education programs do not meet the demands of the industry. It is likely that this problem is not easily solved, since education programs have a rigid structure that is not easily changed. To map the mismatch, the need of industry for employees should be analyzed, as well as the supply of education. The differences between them should be declined. To achieve this, there are multiple solutions to think of.
- Bring industry and educational programs in contact with each other. The industry can assign their needs and universities can state what they offer.
  - The industry and educational programs should collaborate in order to simplify doing an internship. By doing an internship, students are better aware of the possibilities in the industry. Furthermore, the industry has immediately access to skilled students and eventually new employees. LSH can function as lobby by raising the interest of the industry for attracting students and PhD's to their organization.
- In general, organize meetings to discuss the problems in the sector. This can be done on the basis of this research, or by additional questionnaires. Stakeholders can indicate which factors hamper their innovation processes. Relevant partners must be invited. Not only actors that experience disadvantages of various factors should be invited, but also supporters of the issue. Furthermore, actors who have the ability to change the issue should be involved in the discussion. An example is problems with legislation. The government is the actor that can change the legislation. Before they can make changes, they have to know what the problems are. Therefore, SME's that experience disadvantages of the current legislation should be invited. Furthermore, actors who do not experience problems have the possibility to point out the strengths of the legislation. In this way, each party can speak up, and the government has an overview of the pro's and con's, and can decide to act upon it or not. LSH can contribute to solve this problem by being the organizer of and mediator in the discussion.

### 8.3 PROVIDING INFORMATION AND SERVICES

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In the service asymmetry, the need for information and the need for financial support from the government is shown. LSH can act upon this need by providing useful information to the stakeholders. Furthermore, LSH can provide services to decrease the inability of the stakeholders to fulfill their goals. This can be done in several ways:

- As mentioned before, funding is important for all stakeholder groups, but not achieved by one of them. Especially SME's have difficulties with gaining financial support. To help the stakeholders gain funding, an overview of all possible financial sources should be

developed. This overview should present both public and private investors, as well as subsidies. The overview should be subdivided in subsidies for certain disease areas or type of organization that could apply for funding, etc. In addition, links to the website of the government should be presented. In this way, additional information can be found easily.

- Facts and figures about the sector are needed by all stakeholder groups. Therefore, this should be presented on the website. The yearly outlook of the Nyenrode Investigation can be used to keep this information up-to-date. Furthermore, other sources can be used to complement it.
- Besides facts and figures about the sector, stakeholders want to be up to date about new developments in the sector. News items should be collected from the internet. This can be done by searching for news on websites of stakeholders. Since this costs a lot of time, the aim is that stakeholders will present news items themselves. Furthermore, events can be organized where stakeholders present new items. The most important news items can be selected to be presented on the website or reported via personal mail. This would not only lead to a news archive with the most important news facts on it, but it would also attract stakeholders to the website, because they are curious whether their news item will be published.
- RI's and TTO's have indicated that they could benefit from information about companies in the Netherlands. LSH provides this service already. RI's and TTO's should be added to the database in order to provide this information to these stakeholder groups.

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#### 8.4 IMPROVE THE IMAGE OF LSH

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Although the overall vision of stakeholders towards LSH is positive, actions could be taken to maintain and increase this vision. A positive vision of stakeholders leads to trust of the stakeholders and commitment to the innovation program. Furthermore, some of the negative aspects felt by stakeholders should be removed. This can be done by the following actions:

- One of the negative aspects addressed by the stakeholders is the hesitation whether LSH puts its own interests before the interests of the stakeholders. This is largely caused by the fact that LSH and TI Pharma are located in the same office and that they share employees. TI Pharma is, by some stakeholders, seen as a comparable organization that has to compete for the same subsidies. LSH, as coordinating actor, is therefore seen as beneficial for TI Pharma, and stakeholders have the feeling that they put the interests of TI Pharma before the interests of other actors in the field. This could be avoided by separating LSH completely from TI Pharma. Furthermore, this should be clearly communicated to the sector.

- Presenting Dutch life sciences and health sector as a unity is assessed positively by all types of stakeholders. Factors that are positively assessed should be expanded and fulfilled. To maintain the feeling of stakeholders towards this action positive, stakeholders should be involved in the process.
- Stakeholders have indicated that they consider to make use of the services of LSH in the future. They will only do so when the services are in line with their needs. LSH should constantly investigate what the needs of stakeholders are in order to be able to anticipate to those needs and provide new services. Furthermore, the current services should be assessed and adjusted. This would commit the stakeholders to the innovation program.
- RI's and LSH provide comparable services. To make sure that RI's do not feel threatened by LSH in the future, there must be an agreement between LSH and the RI's about the responsibilities of both parties. LSH should not take over all the services of RI's but they have to complement each other. To be able to do so, they have to discuss which responsibility will be executed by which organization. Furthermore, they have to investigate how they can collaborate with each other to strengthen each other.

#### 8.5 ACTIVITIES IN WHICH LSH SHOULD NOT INTERFERE

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Some of the activities of the stakeholders can be performed without interfering from third parties. This is presented in the barrier and stimuli asymmetry. There are important goals that can be achieved by the stakeholders and some positively stimulating factors are already experienced. It would be useless to interfere here. Furthermore, the stakeholders have indicated that they do not need some of the services that will be provided by LSH. Therefore, LSH should not interfere in the following actions:

- Stakeholders were more or less unanimous about services they did not needed. The first services in which they are not interested is support to move to a foreign country. For RI's and TTO's, this result is not surprising, since they are bounded to the region wherein they are located. SME's on the other hand are also not interested in moving their business activities. LSH should therefore not take any actions in supporting its stakeholders in moving their activities.
- Secondly, SME's, TTO's and RI's do not feel the need to advertise their company. All three groups of stakeholders have mentioned they will not benefit from advertising their organization. It is therefore not useful for LSH to provide this service to its stakeholders.

- All stakeholders have indicated that they do not need support in offering their equipment, knowledge or materials. A market place to offer different kind of things would therefore not be used by stakeholders. LSH should not focus on those types of services.
- Networking is important for all types of stakeholders. The same applies for finding collaborating partners. All stakeholders have indicated that they can benefit from the presence of partners to collaborate with. The stakeholders also have indicated that they are able to network and to find partners to collaborate with. Therefore, LSH should not focus on match making activities to bring partners together and improve their networking skills. The only stakeholder group that has denoted that they can improve their networking capabilities is that of TTO's. It would be useless to create a market place where actors can find each other, because they have indicated that they can do this without interference of a third party.
- Access to a library is only by SME's positively assessed. Most of them have access to scientific papers. Often, this is in an illegal way. The stakeholders have denoted that they are content with this way of gaining information. Therefore, LSH should not interfere here by providing access to a library. Probably, SME's would not make use of it and because of that it would be a waste of money and effort.

## 8.6 INCREASE THE AWARENESS FOR COMMERCIALIZATION

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Finally, LSH has the aim to improve the valorization of fundamental knowledge into socio-economic benefits. Both TTO's and RI's have indicated that the awareness of researchers for commercialization is low. The following actions would contribute to the improvement of the valorization chain:

- Universities should gain a percentage to implement valorization. Historically seen, universities do not have a commercial purpose. Valorization is not embedded in their system. Lawyers and fiscal employees can help universities and researchers to organize their research and patent knowledge when needed. In this action point, LSH can function as lobby to convince government and universities of the advantage of valorization.
- Entrepreneurship courses for both students and SME's. Students are often not aware of career possibilities other than doing research. Furthermore, SME's can benefit from commercial thinking. By learning more about entrepreneurship, the students and SME's can learn how their knowledge can be of maximum benefit. LSH can contribute by offering such courses, and by collaborating with universities so that they are able to offer these courses themselves.

- Students should already be made aware about the possibilities to start their own organization. Most of the students are interested in doing research, but do not know much about commercialization. By means of courses during their education, this possibility should gain attention. LSH can contribute here by communicating with universities to make them aware of this opportunity and by providing useful information for courses.
  
- One of the problems of TTO's is that it is difficult to find entrepreneurs to guide and support start-ups. Since LSH has started collaboration with Nyenrode Business University to enable entrepreneurs to follow an MBA, LSH could expand this collaboration with TTO's, to share knowledge and information. Entrepreneurs could, for instance, do their internships at new start-ups of TTO's. This could have two advantages. First, TTO's have access to highly qualified entrepreneurs. Secondly, Nyenrode has intense contact with TTO's and start-ups to identify the problems and difficulties in the sector. The MBA-program could be adjusted to this.



## 9. CONCLUSIONS

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The main research question of the research conducted is *'How can the organization 'Life Sciences & Health', functioning as a knowledge intensive business service in a principal agent relationship with its stakeholders decrease the asymmetry problems between them in order to improve its services towards the stakeholders and to diminish the differences in congruence between them and strengthen the commitment of the stakeholders towards the innovation program'*? By using a theoretical framework combining the principal-agent theory and the KIBS theory, asymmetry problems between LSH and the stakeholders could be identified. Identifying these asymmetry problems have led to an overview of barriers of stakeholders, factors that could positively stimulate the performance of the stakeholders and the need for services. Furthermore, it became visible whether the perception of LSH of these barriers, stimuli and needs were correct. In addition, the preferences of the stakeholders about the frequency of communication with LSH and the preferred communication tool became clear. Finally, the use of the combined theoretical framework provided the vision of the stakeholders of the innovation program. The identification of the asymmetry problems was the basis for the steps described below, that should be taken in order to diminish the differences in congruence between LSH and the stakeholders and to strengthen the commitment of the stakeholders towards the innovation program.

There are several ways in which the asymmetry problems between LSH and the stakeholders could be decreased. The actions that should be taken by LSH can be divided into six groups. First, the awareness of the stakeholders of the innovation program should be raised. Without stakeholders knowing about the innovation program, they cannot make use of it, and LSH is than not able to contribute to the innovation processes of these stakeholders. Furthermore, the innovation and investment climate of the Dutch life sciences and health sector cannot be improved. Awareness of stakeholders about the innovation program can best be achieved via personal contact with stakeholders. Furthermore, the website of LSH should be more user-focused.

Secondly, LSH can function as lobby to decrease the problems of the stakeholders. LSH can act as intermediary between stakeholders and the government, but also between the industry and universities. Furthermore, LSH should provide information and services to the stakeholders that are needed by the stakeholders. LSH has to be aware of the needs and wishes of the stakeholders. In that way, the services of LSH can support the stakeholders in improving their activities. Without knowledge about the characteristics of the stakeholders, it is possible that the services of LSH are not in line with the needs of the stakeholders, what could lead to a lack of use of the services by the stakeholders. Suggestions to maintain awareness of the needs of stakeholders is by communicating with them and by giving them the opportunity to tell their needs to LSH. LSH has to act upon the needs of the stakeholders by means of adjusting the services of LSH to the needs of the stakeholders.

In addition, the awareness of researchers should be raised for commercialization. This would improve the valorization of fundamental knowledge into socio-economic benefits. LSH can support this by, among other activities, providing entrepreneurial courses to students and PhD's and by raising the awareness of students of the possibility to start their own organization.

LSH should only interfere when stakeholders need support. Activities that can be performed by stakeholders on their own should not be supported by LSH. Not only would that be a waste of time, money and effort, in addition, stakeholders associate LSH with activities that do not provide added value to their organization. Finally, LSH has to improve its image to change the vision of LSH held by stakeholders. A positive image stimulates commitment of stakeholders.

## 10. DISCUSSION

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This research has its limitations. First, the focus of this research was on three stakeholder groups; small and medium sized enterprises, regional initiatives and technology transfer offices. LSH is an organization that has the aim to improve the entire life sciences and health sector. As presented in the methodology chapter, this sector comprises more stakeholders. To complete this research, and to be able to support all types of stakeholders in their innovation processes, the asymmetries between LSH and other stakeholders should be investigated as well. In that way, the entire sector could benefit from the innovation program Life Sciences & Health. In this research, eleven SME's were interviewed. This number is relatively low, looking at the total number of SME's involved in the life sciences and health sector in the Netherlands. To elaborate this research, more SME's should be interviewed.

The second limitation is the small number of SME's in this research. During the data collection, SME's and large pharmaceutical companies were invited to participate in this research. The number of SME's and large pharmaceutical companies that finally agreed to participate was disappointingly low. This has influenced the quantity of data for this stakeholder group. Further research should be done to expand the number of interviews in this group, especially with matured firms. In addition, the total number of interviews was low. This implies that only an indication about the asymmetry problems can be given.

Furthermore, the research design was based upon a quantitative analysis of empirical data. This limited the possibility to explain the results. Further research should be done to include qualitative data. Another remark is that the firm size of the SME's in this research varied. Furthermore, the maturity of the firms were not the same for all stakeholders. Future research should point out whether these variables would influence the outcome of the research.

One remarkable outcome of this research was that SME's are able to network. In several articles, the opposite was presented. Networking is one of the main activities of organizations to be able to innovate and commercialize products [11]. In the literature is stated that there is a shortage of collaboration between universities and firms, and between SME's itself. Joint activities of different actors is especially needed in the development of new medicine, since one actor does rarely possess all the needed resources and knowledge [11]. Innovation and the success of commercialization is partly the result of the collaboration between research centers, small biotech companies and large pharmaceutical companies [14]. Often, SME's are unfamiliar with building a network, or it requires too much effort to explore the possibilities of the network [82]. Those articles stated that SME's have difficulties with finding collaborating partners and resources, because of their small network. However, in this research is shown that SME's are certainly able to network. Networking is one of the main priorities of SME's, and they have indicated that they have achieved this goal completely. A possible reason for the difference

between the lack of networking capabilities described in literature and the ability of networking capabilities of SME's found in this research is that all SME's that were interviewed for this research were able to survive because of their networking capabilities. This does not necessarily mean that all SME's are able to network.

Another outcome of the research was the contrast between SME's on the one hand and regional initiatives and TTO's on the other hand regarding the need for commercialization by researchers. According to literature, academic entrepreneurs are in advent. This means that academic researchers start a spin-off from the university to commercialize their knowledge [13]. Those entrepreneurs are not necessarily interested in commercial revenues and fast growing companies, but they want to pursue their research interests [13]. Spin-offs of universities have two options how to lead the new organization. First, faculty members can have a leading role or secondly, external entrepreneurs can be attracted to perform this activity. The most favorable situation is to combine both external entrepreneurs and internal researchers [83]. Academic entrepreneurs, the inventors of the knowledge on which the spin-off is based, are often highly committed to the technology. On the downside, those entrepreneurs often lack business skills and commercial insight [83, 84]. The presence of external entrepreneurs increases the chance of commercial success, although they are less committed to the technology. The mixture of both internal and external entrepreneurs would therefore be the most favorable one [83]. This assumption is shared with TTO's. They have acknowledged the need for external entrepreneurs. The problem is that those entrepreneurs are difficult to find and can often only be committed to the organization for a short period of time. On the other hand, both TTO's and RI's have mentioned the lack of business skills of SME's and researchers. Researchers often want to publish their research. From a commercial view, publishing is only possible after patenting the innovation. TTO's have mentioned this problem during the interviews and this fact is also mentioned in literature [84]. The SME's itself, on the other hand, do not acknowledge that they should improve their commercial insights and business skills. This is possibly caused by self overrating of SME's. During interviews, they have mentioned that they are able to think in a commercial manner and collaborate with other actors in the field to be able to innovate and commercialize the product.

SME's have indicated that they have, although often illegal, access to literature. When they were asked to obtain reduction for access to a literature database, they all mentioned that they would not make use of it, since they are satisfied with the current situation. However, in several articles is mentioned that researchers become biased, because the higher quality research cannot be found on the web without payment [85]. Besides the fact that the articles with a relatively higher quality are often not for free, the web only contains about 8% of all publications, and only a fraction of the books that are available online [86]. Organizations should therefore not only make use of online databases, but also visit libraries. Since SME's interviewed in this research did not consider to make use of paid databases, it is possible that the

information they gain from the internet is biased and of less value. Further research should determine whether SME's are aware of this bias and whether they see it as a problem.

During the interviews, SME's have mentioned the lack of highly qualified personnel. Literature acknowledges the need for qualified employees in biotech organizations [87-89]. Knowledge can be kept in the organization by patents, by employees working in the organization and by attracting new employees to the organization [88]. According to the interviewed SME's, the problem lies in the attraction of new employees. The number of qualified employees is low, and the number of vacancies high. The biotechnology sector is knowledge intensive and therefore requires employees that are highly qualified [90]. Close links with universities have been mentioned as strategy for SME's to provide access to knowledge and resources, as well as access to a source of potential employees [91]. This link was also mentioned as a communication strategy in this research.

To conclude; most of the asymmetries found in this research can be substantiated by literature. Still, literature has provided additional information which can be used to expand further research and complement the number of indicators used in this research. Further research will be more complete in that way.



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# Improving the services of a knowledge intensive business service in a principal-agent relationship in the Dutch life sciences and health sector

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*The case of the innovation program Life Sciences & Health*

## - Annexes-

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## APPENDIX I TABLES

Table 25 Goals of SME's

Goals	SME's			
	mean	co var	stdev	ranking
<b>Goals for now</b>				
Funding	4,64	0,26	1,21	3
Networking	4,36	0,12	0,50	1
Find (highly qualified) personnel	3,91	0,18	0,70	2
Growth	3,36	0,33	1,12	4
Discover scientific breakthrough	3,36	0,36	1,21	6
Bring product(s) to the market	3,36	0,43	1,43	8
Patents	3,27	0,43	1,42	9
Licenses	3,18	0,56	1,78	11
Find collaborating partner	3,18	0,46	1,47	12
Transfer knowledge to industry/other organizations	3,00	0,33	1,00	5
Profitability	3,00	0,58	1,73	14
Increase the use of knowledge created by the organization	2,36	0,61	1,43	15
Create awareness of researchers for commercialization	2,27	0,56	1,27	13
Improve business skills	2,18	0,45	0,98	10
Improve industrial skills	2,18	0,67	1,47	17
Improve academic skills	1,73	0,37	0,65	7
Move to foreign country	1,45	0,64	0,93	16
Correlation coefficient = -0,74				

Table 26 Achievement of the goals of SME's

Barriers	SME's			
	mean	co var	stdev	ranking
<b>Goals that are difficult to achieve</b>				
Networking	4,45	0,12	0,52	1
Find collaborating partner	3,73	0,38	1,42	2
Find (highly qualified) personnel	3,27	0,48	1,56	3
Patents	2,73	0,68	1,85	5
Discover scientific breakthrough	2,18	0,84	1,83	6
Growth	2,09	0,89	1,87	7
Licenses	2,00	0,55	1,10	4
Funding	2,00	0,95	1,90	8
Bring product(s) to the market	1,82	1,04	1,89	9
Increase the use of knowledge created by the organization	1,64	1,10	1,80	10
Improve business skills	1,36	1,15	1,57	11
Transfer knowledge to industry/other organizations	1,27	1,22	1,56	13
Improve academic skills	1,18	1,19	1,40	12
Profitability	1,18	1,41	1,66	14
Create awareness of researchers for commercialization	1,00	1,41	1,41	15
Improve industrial skills	0,82	1,71	1,40	16
Move to foreign country	0,09	3,32	0,30	17
Correlation coefficient = -0,65				

Table 27 Causes of the inability to fulfill the goals by SME's

Barriers	SME's			
	mean	co var	stdev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
A lack of financial resources	3,82	0,33	1,25	1
A lack of continuity of financial flows	3,64	0,46	1,69	2
Legislation problems	2,64	0,62	1,63	7
Lack of highly qualified employees	2,55	0,57	1,44	3
Lack of access to highly qualified employees	2,27	0,63	1,42	8
Stacking of subsidies/grants	1,91	1,03	1,97	19
Lack of business skills	1,82	0,88	1,60	5
Too little knowledge about business opportunities	1,82	0,73	1,33	11
Not enough cooperation partners	1,82	0,59	1,08	16
Not able to find the right collaboration partner	1,73	0,69	1,19	4
No access to scientific papers	1,73	0,58	1,01	10
No access to progress of competitors	1,73	0,78	1,35	14
Problems with licensing	1,64	0,74	1,21	12
Not able to transfer knowledge to other organizations	1,55	0,93	1,44	9
Problems with patenting	1,55	0,67	1,04	18
No flexibility in using foreground IP	1,45	1,21	1,75	20
A shortage of networking capabilities	1,36	0,59	0,81	6
Not able to find service partner (legal, economic, marketing, etc)	1,18	0,91	1,08	17
Too little knowledge about research	1,10	0,80	0,88	15
Not the right technology	1,09	0,76	0,83	13
Correlation coefficient = -0,65				

Table 28 Factors with a potentially positive influence on the performance of SME's

Stimuli	SME's			
	mean	co var	stdev	ranking
<b>Factors with positive influence on the organization</b>				
Financial support	4,27	0,24	1,01	2
Availability of partners to collaborate with	4,18	0,10	0,40	1
Access to library	4,18	0,34	1,40	3
Improved governmental legislation	3,00	0,61	1,84	4
Industrial sector initiatives	3,00	0,63	1,90	5
Education and training	2,82	0,67	1,89	6
Improved supplier relationships	2,55	0,73	1,86	7
Awareness of the organization by others	2,09	1,01	2,12	8
Correlation coefficient = -0,97				

Table 29 Factors that are positively experienced by SME's

Stimuli	SME's			
	mean	co var	stdev	ranking
<b>Experienced positive factors</b>				
Availability of partners to collaborate with	4,18	0,28	1,17	2
Access to library	3,82	0,23	0,87	1
Financial support	3,09	0,40	1,22	3
Education and training	2,27	0,81	1,85	6
Improved supplier relationships	2,09	0,78	1,64	5
Industrial sector initiatives	2,00	0,77	1,55	4
Awareness of the organization by others	1,91	1,03	1,97	8
Improved governmental legislation	1,64	1,00	1,63	7
Correlation coefficient = -0,96				

Table 30 Awareness of SME's of the innovation program

Awareness	SME's			
	mean	co var	stdev	ranking
<b>Agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	2,64	0,39	1,03	1
Is the organization aware of the services of LSH?	2,27	0,56	1,27	3
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,18	0,45	0,98	2
Is the organization aware of the possibilities for the organization to make use of the services?	2,18	0,61	1,33	4

Table 31 Services needed by LSH

Services	SME's			
	mean	co var	stdev	ranking
<b>Services needed by stakeholders</b>				
Financial support from government	3,82	0,37	1,40	1
Access to library to obtain scientific literature	3,82	0,40	1,54	2
Information about subsidies	3,45	0,47	1,63	3
News items about the sector	3,00	0,52	1,55	4
Facts and figures about the sector	3,00	0,52	1,55	5
Information about regulations and guidelines	3,00	0,54	1,61	6
Access to a database to obtain competitive intelligence	3,00	0,60	1,79	8
A market place where you can find qualified personnel	2,91	0,62	1,81	10
Information about companies in the Netherlands	2,73	0,59	1,62	7
Information about sharing facilities with other companies	2,73	0,66	1,79	12
A market place to find equipment that you can use	2,73	0,68	1,85	13
The possibility to find services that your organization needs	2,64	0,62	1,63	9
Post calls for (funding) proposals	2,64	0,73	1,91	18
Access to a database for patent information	2,64	0,80	2,11	19
A market place to find inventions to license	2,55	0,69	1,75	14
Access to company database of the Netherlands	2,55	0,71	1,81	16
Access to database to find collaborating partners	2,45	0,69	1,69	15
Information about venture capitalists	2,36	0,85	2,01	23
The possibility to offer your services to other organizations	2,27	0,63	1,42	11
A market place to offer your equipment to other organizations	2,09	0,72	1,51	17
A market place to find partners in start of investigation to collaborate with	2,09	0,84	1,76	22
Information about education and trainings in the field of business skills	2,00	0,84	1,67	21
Information about service providers (CRO's, CMO's, legal, finance, etc)	2,00	0,87	1,73	25
A market place to find materials that you can use	2,00	0,87	1,73	26
A market place to offer inventions for licensing	2,00	0,89	1,79	28
Access to a database for product information	2,00	0,92	1,84	30
Access to database to find service organizations (legal, communication, etc)	2,00	0,92	1,84	31
Access to database to find venture capitalist	2,00	0,92	1,84	32
Information about regional initiatives of the Netherlands	1,73	0,86	1,49	24
Information about education and trainings in the field of academic skills	1,73	0,90	1,56	29
A market place to offer materials for other organizations	1,73	0,94	1,62	33
Access to database to find incubators	1,64	0,83	1,36	20
Support to open new location in the Netherlands	1,55	1,02	1,57	35
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,45	0,89	1,29	27
Support to move to foreign country	1,18	0,99	1,17	34
Correlation coefficient = -0,93				

Table 32 Vision of SME's towards LSH

Vision		SME's			
Vision of stakeholders towards LSH		mean	co var	stdev	ranking
P	My company could benefit from LSH, but would survive without is as well	4,18	0,14	0,60	11
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for the	4,00	0,34	1,34	13
P	Do you think you will make use of the services of LSH in the future?	4,00	0,00	0,00	1
P	I trust the intentions of LSH to give the life sciences and health sector an impulse	3,82	0,11	0,40	6
P	Is LSH useful for your organization?	3,73	0,13	0,47	7
P	Do you think that the objectives of LSH will bear fruit?	3,64	0,14	0,50	10
P	Do you trust the aim of LSH to improve the innovation processes of the	3,55	0,34	1,21	14
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for my	3,36	0,38	1,29	15
N	LSH provides comparable services as another organization that my company makes	2,73	0,44	1,19	16
P	I will make use of education and trainings provided by LSH	2,18	0,45	0,98	17
N	Do you think LSH puts its own interests before the interests of the stakeholders?	1,64	0,83	1,36	20
N	Is LSH a threat to your organization?	1,09	0,28	0,30	12
N	LSH is a competitor of my company	1,00	0,00	0,00	4
N	LSH provides comparable services as my organization	1,00	0,00	0,00	2

Table 33 Comparison of the importance of the goals and the achievement of the goals of SME's

Goals  indicator	Goals for now			Achievement of the goals		
	mean	co var	stdev	mean	co var	stdev
Funding	4,64	0,26	1,21	2,00	0,55	1,10
Networking	4,36	0,12	0,50	4,45	0,12	0,52
Find (highly qualified) personnel	3,91	0,18	0,70	3,27	0,48	1,56
Growth	3,36	0,33	1,12	2,09	0,89	1,87
Discover scientific breakthrough	3,36	0,36	1,21	2,18	0,84	1,83
Bring product(s) to the market	3,36	0,43	1,43	1,82	1,04	1,89
Patents	3,27	0,43	1,42	2,73	0,68	1,85
Licenses	3,18	0,56	1,78	2,00	0,95	1,90
Find collaborating partner	3,18	0,46	1,47	3,73	0,38	1,42
Transfer knowledge to industry/other organizations	3,00	0,33	1,00	1,27	1,22	1,56
Profitability	3,00	0,58	1,73	1,18	1,19	1,40
Increase the use of knowledge created by the organization	2,36	0,61	1,43	1,64	1,10	1,80
Create awareness of researchers for commercialization	2,27	0,56	1,27	1,00	1,41	1,41
Improve business skills	2,18	0,45	0,98	1,36	1,15	1,57
Improve industrial skills	2,18	0,67	1,47	0,82	1,71	1,40
Improve academic skills	1,73	0,37	0,65	1,18	1,41	1,66
Move to foreign country	1,45	0,64	0,93	0,09	3,32	0,30

Table 34 Paired samples t-test for differences in importance of goals and achievement of goals of SME's

	Sig. (2-tailed)
Funding	.003
Networking	.588
Finding highly qualified employees	.283

Table 35 Comparison potentially stimulating factors and positively experienced factors of SME's

Stimuli	Factors with positive influence on the organization			Experienced factors		
	mean	co var	st dev	mean	co var	st dev
Financial support	4,27	0,24	1,01	3,09	0,40	1,22
Availability of partners to collaborate with	4,18	0,34	1,40	4,18	0,28	1,17
Access to library	4,18	0,10	0,40	3,82	0,23	0,87
Improved governmental legislation	3,00	0,63	1,90	1,64	1,00	1,63
Industrial sector initiatives	3,00	0,61	1,84	2,00	0,77	1,55
Education and training	2,82	0,67	1,89	2,27	0,81	1,85
Improved supplier relationships	2,55	0,73	1,86	2,09	0,78	1,64
Awareness of the organization by others	2,09	1,01	2,12	1,91	1,03	1,97

Table 36 Paired samples t-test for differences in potentially positively stimulating factors and positively experienced factors OF SME'S

	Sig. (2-tailed)
Financial support	.019
Availability of partners to collaborate with	1.000
Access to a library	.221

Table 37 Goals of RI's

Goals	Regional Initiatives			
	mean	co var	st dev	ranking
<b>Goals for now</b>				
Networking	4,90	0,06	0,32	1
Find collaborating partner	4,60	0,11	0,52	2
Transfer knowledge to industry/other organizations	4,40	0,16	0,70	4
Funding	4,20	0,15	0,63	3
Create awareness of researchers for commercialization	3,90	0,41	1,60	5
Growth	2,90	0,70	2,02	6
Increase the use of knowledge created by the organization	2,80	0,75	2,10	7
Improve business skills	2,50	0,81	2,01	8
Bring product(s) to the market	2,40	0,86	2,07	9
Find (highly qualified) personnel	2,00	0,88	1,76	10
Discover scientific breakthrough	1,80	1,01	1,81	11
Improve academic skills	1,20	1,17	1,40	12
Patents	1,00	1,33	1,33	14
Move to foreign country	1,00	1,56	1,56	17
Profitability	0,80	1,29	1,03	13
Improve industrial skills	0,70	1,36	0,95	15
Licenses	0,60	1,41	0,84	16
Correlation coefficient = -0,99				

Table 38 Achievement of the goals of RI's

Barriers	Regional Initiatives			
	mean	co var	st dev	ranking
<b>Goals that are difficult to achieve</b>				
Networking	3,60	0,30	1,07	3
Find collaborating partner	3,00	0,50	1,49	6
Transfer knowledge to industry/other organizations	2,80	0,33	0,92	4
Growth	2,60	0,71	1,84	7
Funding	1,80	0,44	0,79	5
Improve business skills	1,80	0,94	1,69	9
Find (highly qualified) personnel	1,60	0,94	1,51	10
Increase the use of knowledge created by the organization	1,60	1,07	1,71	11
Create awareness of researchers for commercialization	1,50	0,72	1,08	8
Improve academic skills	1,00	1,70	1,70	14
Bring product(s) to the market	0,80	1,15	0,92	12
Patents	0,80	2,02	1,62	15
Profitability	0,70	1,36	0,95	13
Discover scientific breakthrough	0,30	2,25	0,67	16
Licenses	0,10	3,16	0,32	17
Move to foreign country	0,00	0,00	0,00	1
Improve industrial skills	0,00	0,00	0,00	2
Correlation coefficient = -0,44				

Table 39 Causes of the inability to fulfill the goals of RI's

Barriers	Regional Initiatives			
	mean	co var	st dev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
A lack of continuity of financial flows	3,90	0,37	1,45	2
Too little knowledge about business opportunities	3,50	0,36	1,27	1
Stacking of subsidies/grants	2,90	0,75	2,18	4
Lack of business skills	2,60	0,75	1,96	3
A lack of financial resources	2,00	0,97	1,94	5
Not able to transfer knowledge to other organizations	1,80	1,07	1,93	8
Lack of access to highly qualified employees	1,70	1,15	1,95	11
Legislation problems	1,70	1,15	1,95	12
A shortage of networking capabilities	1,50	1,01	1,51	6
Lack of highly qualified employees	1,50	1,14	1,72	10
No flexibility in using foreground IP	1,20	1,29	1,55	15
Too little knowledge about research	1,10	1,09	1,20	9
Not able to find the right collaboration partner	1,10	1,32	1,45	16
Problems with patenting	1,10	1,39	1,52	17
Not able to find service partner (legal, economic, marketing, etc)	1,10	1,45	1,60	20
Problems with licensing	0,90	1,43	1,29	18
No access to scientific papers	0,90	1,43	1,29	19
No access to progress of competitors	0,60	1,17	0,70	13
Not enough cooperation partners	0,50	1,05	0,53	7
Not the right technology	0,40	1,29	0,52	14
Correlation coefficient = -0,93				

Table 40 Factors with a potentially stimulating influence on the performance of RI's

Stimuli	Regional Initiatives			
	mean	co var	st dev	ranking
<b>Factors with positive influence on the organization</b>				
Awareness of the organization by others	4,70	0,10	0,48	1
Availability of partners to collaborate with	4,50	0,12	0,53	2
Financial support	4,00	0,37	1,49	3
Improved governmental legislation	3,10	0,70	2,18	5
Industrial sector initiatives	2,90	0,70	2,02	4
Education and training	2,50	0,89	2,22	6
Access to library	2,10	1,09	2,28	7
Improved supplier relationships	0,80	2,19	1,75	8
Correlation coefficient = -0,97				

Table 41 Factors that are positively experienced by regional initiatives

Stimuli	Regional Initiatives			
	mean	co var	st dev	ranking
<b>Factors that are experienced by stakeholders</b>				
Availability of partners to collaborate with	4,40	0,19	0,84	1
Financial support	3,10	0,36	1,10	2
Awareness of the organization by others	3,10	0,56	1,73	3
Industrial sector initiatives	2,70	0,74	2,00	4
Education and training	1,70	1,11	1,89	6
Improved governmental legislation	1,30	1,09	1,42	5
Access to library	1,30	1,66	2,16	7
Improved supplier relationships	0,80	2,19	1,75	8
Correlation coefficient = -0,91				

Table 42 Awareness of RI's of the innovation program

Awareness	Regional Initiatives			
	mean	co var	st dev	ranking
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	3,30	0,29	0,95	1
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,90	0,34	0,99	2
Is the organization aware of the services of LSH?	2,50	0,34	0,85	3
Is the organization aware of the possibilities for the organization to make use of the services?	2,50	0,34	0,85	4

Table 43 Need for services by RI's

Services	Regional Initiatives			
Services needed by stakeholders	mean	co var	st dev	ranking
Information about companies in the Netherlands	4,30	0,16	0,67	1
News items about the sector	4,00	0,37	1,49	2
Facts and figures about the sector	4,00	0,37	1,49	3
Financial support from government	4,00	0,37	1,49	4
Information about subsidies	3,80	0,39	1,48	5
Access to company database of the Netherlands	3,10	0,65	2,02	6
Information about regional initiatives of the Netherlands	3,00	0,70	2,11	7
Access to database to find collaborating partners	2,70	0,80	2,16	8
Information about venture capitalists	2,70	0,87	2,36	9
Information about sharing facilities with other companies	2,40	0,93	2,22	10
A market place where you can find qualified personnel	2,30	0,94	2,16	12
A market place to offer materials for other organizations	2,30	0,94	2,16	13
A market place to find partners in start of investigation to collaborate with	2,20	0,93	2,04	11
Information about regulations and guidelines	2,20	1,00	2,20	14
Access to database to find venture capitalist	2,10	1,04	2,18	16
The possibility to offer your services to other organizations	2,10	1,06	2,23	17
A market place to offer inventions for licensing	2,00	1,03	2,05	15
Information about service providers (CRO's, CMO's, legal, finance, etc)	1,90	1,09	2,08	18
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,90	1,09	2,08	19
The possibility to find services that your organization needs	1,90	1,12	2,13	20
A market place to offer your equipment to other organizations	1,80	1,14	2,04	21
A market place to find equipment that you can use	1,80	1,14	2,04	22
A market place to find materials that you can use	1,80	1,14	2,04	23
Information about education and trainings in the field of business skills	1,70	1,21	2,06	24
Access to library to obtain scientific literature	1,60	1,22	1,96	25
Post calls for (funding) proposals	1,60	1,32	2,12	33
Access to database to find incubators	1,50	1,23	1,84	26
Access to a database to obtain information about progress concerning a certain target (competitive intelligence)	1,50	1,31	1,96	29
Support to move to foreign country	1,44	1,30	1,88	28
A market place to find inventions to license	1,40	1,27	1,78	27
Information about education and trainings in the field of academic skills	1,30	1,31	1,70	30
Access to a database for product information	1,30	1,31	1,70	31
Support to open new location in the Netherlands	1,10	1,32	1,45	32
Access to a database for patent information	0,90	1,61	1,45	35
Access to database to find service organizations (legal, communication, etc)	0,80	1,54	1,23	34

Correlation coefficient = -0,99

Table 44 Vision of RI's of the innovation program

Vision		Regional Initiatives			
Vision of stakeholders towards LSH		mean	co var	st dev	ranking
P	Do you think you will make use of the services of LSH in the future?	3,90	0,19	0,74	2
N	LSH provides comparable services as my organization	3,80	0,21	0,79	3
P	Is LSH useful for your organization?	3,80	0,24	0,92	5
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	3,80	0,37	1,40	8
P	My company could benefit from LSH, but would survive without is as well	3,70	0,31	1,16	7
P	Do you think that the objectives of LSH will bear fruit?	3,60	0,23	0,84	4
P	I trust the intentions of LSH to give the life sciences and health sector an impulse	3,60	0,37	1,35	9
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,60	0,40	1,43	10
P	Do you trust the aim of LSH to improve the innovation processes of the	3,40	0,28	0,97	6
N	Do you think LSH puts its own interests before the interests of the stakeholders' interests?	3,10	0,18	0,57	1
P	I will make use of education and trainings provided by LSH	2,60	0,41	1,07	11
N	LSH provides comparable services as another organization that my company makes use of	2,30	0,65	1,49	14
N	Is LSH a threat to your organization?	2,20	0,56	1,23	13
N	LSH is a competitor of my company	2,00	1,05	0,53	12

Table 45 Comparison of the importance of the goals and the achievement of the goals of RI's

Goals	Goals for now			Achievement of goals		
	mean	co var	st dev	mean	co var	st dev
Networking	4,90	0,06	0,32	3,60	0,30	1,07
Find collaborating partner	4,60	0,11	0,52	3,00	0,50	1,49
Transfer knowledge to industry/other organizations	4,40	0,16	0,70	2,80	0,33	0,92
Funding	4,20	0,15	0,63	1,80	0,44	0,79
Create awareness of researchers for commercialization	3,90	0,41	1,60	1,50	0,72	1,08
Growth	2,90	0,70	2,02	2,60	0,71	1,84
Increase the use of knowledge created by the organization	2,80	0,75	2,10	1,60	1,07	1,71
Improve business skills	2,50	0,81	2,01	1,80	0,94	1,69
Bring product(s) to the market	2,40	0,86	2,07	0,80	1,15	0,92
Find (highly qualified) personnel	2,00	0,88	1,76	1,60	0,94	1,51
Discover scientific breakthrough	1,80	1,01	1,81	0,30	2,25	0,67
Improve academic skills	1,20	1,17	1,40	1,00	1,70	1,70
Patents	1,00	1,33	1,33	0,80	2,02	1,62
Move to foreign country	1,00	1,56	1,56	0,00	0,00	0,00
Profitability	0,80	1,29	1,03	0,70	1,36	0,95
Improve industrial skills	0,70	1,36	0,95	0,00	0,00	0,00
Licenses	0,60	1,41	0,84	0,10	3,16	0,32

Table 46 Paired samples t-test for differences in importance of goals and achievement of goals of RI's

	Sig. (2-tailed)
Networking	.108
Find collaborating partner	.045
Transfer knowledge to the industry	.436
Funding	.296
Awareness of researchers for commercialization	.000

Table 47 Comparison of potentially stimulating factors and positively experienced factors of RI's

Stimuli	Factors with positive influence on the organization			Experienced factors		
	mean	co var	st dev	mean	co var	st dev
Awareness of the organization by others	4,70	0,10	0,48	3,10	0,56	1,73
Availability of partners to collaborate with	4,50	0,12	0,53	4,40	0,19	0,84
Financial support	4,00	0,37	1,49	3,10	0,36	1,10
Improved governmental legislation	3,10	0,70	2,18	1,30	1,09	1,42
Industrial sector initiatives	2,90	0,70	2,02	2,70	0,74	2,00
Education and training	2,50	0,89	2,22	1,70	1,11	1,89
Access to library	2,10	1,09	2,28	1,30	1,66	2,16
Improved supplier relationships	0,80	2,19	1,75	0,80	2,19	1,75

Table 48 Paired samples t-test for differences in potentially positively stimulating factors and positively experienced factors of RI's

	Sig. (2-tailed)
Awareness of their stakeholders of the organization	.009
Availability of partners to collaborate with	.017
Financial support	.004

Table 49 Goals of TTO's

Goals	TTO's			
	mean	co var	st dev	ranking
<b>Goals for now</b>				
Licenses	4,71	0,10	0,49	1
Create awareness of researchers for commercialization	4,71	0,10	0,49	2
Patents	4,57	0,12	0,53	3
Networking	4,57	0,12	0,53	4
Improve business skills	4,29	0,18	0,76	5
Transfer knowledge to industry/other organizations	4,14	0,45	1,86	6
Increase the use of knowledge created by the organization	4,00	0,46	1,83	7
Discover scientific breakthrough	3,86	0,46	1,77	8
Funding	3,57	0,53	1,90	11
Find collaborating partner	3,43	0,53	1,81	10
Find (highly qualified) personnel	3,14	0,47	1,46	9
Bring product(s) to the market	2,29	0,90	2,06	16
Profitability	1,86	0,72	1,35	14
Improve industrial skills	1,71	0,99	1,70	17
Growth	1,57	0,72	1,13	13
Improve academic skills	1,29	0,74	0,95	15
Move to foreign country	0,71	0,68	0,49	12
Correlation coefficient = -0,87				

Table 50 Achievement of the goals of TTO's

Barriers	TTO's			
	mean	co var	st dev	ranking
<b>Achievement of the goals</b>				
Patents	3,86	0,46	1,77	4
Licenses	3,71	0,48	1,80	5
Transfer knowledge to industry/other organizations	3,57	0,27	0,98	2
Discover scientific breakthrough	3,29	0,46	1,50	3
Networking	3,29	0,55	1,80	8
Increase the use of knowledge created by the organization	2,86	0,71	2,04	10
Create awareness of researchers for commercialization	2,57	0,21	0,53	1
Funding	2,57	0,54	1,40	7
Find collaborating partner	2,57	0,74	1,90	11
Improve business skills	2,29	0,49	1,11	6
Find (highly qualified) personnel	2,29	0,60	1,38	9
Profitability	2,00	1,00	2,00	13
Improve academic skills	2,00	1,26	2,52	14
Bring product(s) to the market	1,71	0,87	1,50	12
Growth	1,29	1,72	2,21	15
Improve industrial skills	0,43	2,65	1,13	17
Move to foreign country	0,14	2,65	0,38	16
Correlation coefficient = -0,89				

Table 51 Causes of the inability to fulfill the goals of TTO's

Barriers	TTO's			
	mean	co var	st dev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
Lack of business skills	3,86	0,18	0,69	1
A lack of financial resources	3,86	0,23	0,90	2
A lack of continuity of financial flows	3,86	0,35	1,35	3
Too little knowledge about business opportunities	3,57	0,36	1,27	4
Lack of highly qualified employees	3,00	0,43	1,29	7
Lack of access to highly qualified employees	3,00	0,43	1,29	8
Not able to find the right collaboration partner	2,14	0,42	0,90	6
A shortage of networking capabilities	2,14	0,50	1,07	10
Not able to transfer knowledge to other organizations	1,57	0,62	0,98	13
Not able to find service partner (legal, economic, marketing, etc)	1,43	0,37	0,53	5
Problems with licensing	1,43	0,89	1,27	17
Legislation problems	1,43	0,98	1,40	18
Not the right technology	1,43	1,13	1,62	19
Too little knowledge about research	1,29	0,59	0,76	11
Not enough cooperation partners	1,14	0,60	0,69	12
Problems with patenting	0,86	0,44	0,38	9
No access to progress of competitors	0,86	0,81	0,69	16
No access to scientific papers	0,71	0,68	0,49	14
Correlation coefficient = -0,83				

Table 52 Factors with a potentially stimulating influence on the performance ofTTO's

Stimuli	TTO's			
	mean	co var	st dev	ranking
<b>Factors with positive influence on the organization</b>				
Financial support	4,43	0,12	0,53	2
Availability of partners to collaborate with	4,00	0,46	1,83	3
Awareness of the organization by others	3,86	0,46	1,77	5
Industrial sector initiatives	3,71	0,46	1,70	4
Education and training	2,86	0,74	2,12	6
Improved governmental legislation	2,29	0,97	2,21	7
Improved supplier relationships	1,43	1,27	1,81	8
Access to library	0,00	0,00	0,00	1
Correlation coefficient = -0,14				

Table 53 Positively experienced factors of RI's

Stimuli	TTO's			
Factors with positive influence on the organization	mean	co var	st dev	ranking
Industrial sector initiatives	3,57	0,22	0,79	2
Financial support	3,14	0,22	0,69	1
Availability of partners to collaborate with	3,14	0,47	1,46	4
Awareness of the organization by others	3,14	0,47	1,46	5
Education and training	2,43	0,52	1,27	6
Improved governmental legislation	1,43	0,37	0,53	3
Improved supplier relationships	0,86	1,84	1,57	7
Access to library	0,71	2,65	1,89	8
Correlation coefficient = -0,82				

Table 54 Awareness of TTO's of the innovation program

Awareness	TTO's			
agreement of the questions	mean	co var	st dev	ranking
Is the organization aware of the innovation program 'Life Sciences & Health'?	2,71	0,51	1,38	4,00
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,14	0,32	0,69	1,00
Is the organization aware of the services of LSH?	1,86	0,37	0,69	2,00
Is the organization aware of the possibilities for the organization to make use of the services?	1,86	0,37	0,69	3,00

Table 55 Services needed by TTO's

Services	TTO's			
	mean	co var	st dev	ranking
<b>Services needed by stakeholders</b>				
Financial support from government	4,57	0,12	0,53	3
Information about companies in the Netherlands	4,29	0,11	0,49	1
Facts and figures about the sector	4,29	0,11	0,49	2
Information about subsidies	4,29	0,18	0,76	4
News items about the sector	4,00	0,25	1,00	6
Information about venture capitalists	3,86	0,23	0,90	5
Information about regulations and guidelines	3,86	0,28	1,07	7
Access to database to find collaborating partners	3,71	0,34	1,25	8
Access to database to find venture capitalist	3,57	0,42	1,51	13
Information about education and trainings in the field of business skills	3,43	0,41	1,40	11
Access to database to find incubators	3,29	0,42	1,38	12
Access to a database to obtain information about progress concerning a certain target (competitive intelligence)	3,14	0,65	2,04	27
Access to company database of the Netherlands	2,86	0,62	1,77	23
Information about sharing facilities with other companies	2,71	0,59	1,60	22
Information about regional initiatives of the Netherlands	2,71	0,63	1,70	26
A market place where you can find qualified personnel	2,57	0,44	1,13	16
Access to a database for product information	2,57	0,77	1,99	34
Information about service providers (CRO's, CMO's, legal, finance, etc)	2,43	0,62	1,51	24
A market place to find partners in start of investigation to collaborate with	2,43	0,67	1,62	28
Access to a database for patent information	2,43	0,75	1,81	33
The possibility to advertise your company (e.g. on website, newsletter, etc)	2,14	0,63	1,35	25
A market place to offer inventions for licensing	2,14	0,68	1,46	30
A market place to offer your equipment to other organizations	2,00	0,58	1,15	20
A market place to offer materials for other organizations	2,00	0,58	1,15	21
Information about education and trainings in the field of academic skills	2,00	0,71	1,41	31
The possibility to offer your services to other organizations	1,86	0,48	0,90	17
Post calls for (funding) proposals	1,86	0,90	1,68	35
A market place to find equipment that you can use	1,71	0,44	0,76	14
A market place to find materials that you can use	1,71	0,44	0,76	15
A market place to find inventions to license	1,57	0,50	0,79	18
Access to library to obtain scientific literature	1,57	0,72	1,13	32
Access to database to find service organizations (legal, communication, etc)	1,43	0,37	0,53	9
The possibility to find services that your organization needs	1,43	0,68	0,98	29
Support to move to foreign country	1,29	0,38	0,49	10
Support to open new location in the Netherlands	1,00	0,58	0,58	19
Correlation coefficient = -0,67				

Table 56 Vision of LSH held by TTO's

Vision		TTO's			
Vision of stakeholders towards LSH		mean	co var	st dev	ranking
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	4,57	0,12	0,53	2
P	Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,57	0,12	0,53	1
P	I trust the intentions of LSH to give the life sciences and health sector an impulse	4,14	0,17	0,69	7
P	My company could benefit from LSH, but would survive without is as well	4,00	0,14	0,58	4
P	Do you think you will make use of the services of LSH in the future?	3,86	0,18	0,69	8
P	Do you think that the objectives of LSH will bear fruit?	3,71	0,13	0,49	3
P	Do you trust the aim of LSH to improve the innovation processes of the stakeholders?	3,71	0,20	0,76	11
N	LSH provides comparable services as another organization that my company makes use of	3,43	0,41	1,40	14
P	Is LSH useful for your organization?	3,29	0,15	0,49	5
P	I will make use of education and trainings provided by LSH	3,00	0,54	1,63	17
N	Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,43	0,40	0,98	13
N	LSH is a competitor of my company	1,57	0,50	0,79	16
N	LSH provides comparable services as my organization	1,57	0,50	0,79	15
N	Is LSH a threat to your organization?	1,43	0,55	0,79	18

Table 57 Comparison between importance of goals and achievement of goals of TTO's

Goals	Goals for now			Goals that are difficult to achieve		
	mean	co var	st dev	mean	co var	st dev
<b>indicators</b>						
Licenses	4,71	0,10	0,49	3,71	0,48	1,80
Create awareness of researchers for commercialization	4,71	0,10	0,49	2,57	0,21	0,53
Patents	4,57	0,12	0,53	3,86	0,46	1,77
Networking	4,57	0,12	0,53	3,29	0,55	1,80
Improve business skills	4,29	0,18	0,76	2,29	0,49	1,11
Transfer knowledge to industry/other organizations	4,14	0,45	1,86	3,57	0,27	0,98
Increase the use of knowledge created by the organization	4,00	0,46	1,83	2,86	0,71	2,04
Discover scientific breakthrough	3,86	0,46	1,77	3,29	0,46	1,50
Funding	3,57	0,53	1,90	2,57	0,54	1,40
Find collaborating partner	3,43	0,53	1,81	2,57	0,74	1,90
Find (highly qualified) personnel	3,14	0,47	1,46	2,29	0,60	1,38
Bring product(s) to the market	2,29	0,90	2,06	1,71	0,87	1,50
Profitability	1,86	0,72	1,35	2,00	1,00	2,00
Improve industrial skills	1,71	0,99	1,70	0,43	2,65	1,13
Growth	1,57	0,72	1,13	1,29	1,72	2,21
Improve academic skills	1,29	0,74	0,95	2,00	1,26	2,52
Move to foreign country	0,71	0,68	0,49	0,14	2,65	0,38

Table 58 Paired samples t-test for differences in importance of goals and achievement of goals of TTO's

	Sig. (2-tailed)
Licensing	.052
Create awareness of researchers for commercialization	.001
Patenting	.343
Networking	.003
Improve business skills	.471
Transfer knowledge to the industry	.001
Increase the use of knowledge created by the organization	.081
Discover scientific breakthrough	.015

Table 59 Comparison of potentially stimulating factors and positively experienced factors of TTO's

Stimuli	Factors with positive influence on the organization			Experienced factors		
	mean	CO VAR	st dev	mean	CO VAR	st dev
Financial support	4,43	0,12	0,53	3,14	0,22	0,69
Availability of partners to collaborate with	4,00	0,46	1,83	3,14	0,47	1,46
Awareness of the organization by others	3,86	0,46	1,77	3,14	0,47	1,46
Industrial sector initiatives	3,71	0,46	1,70	3,57	0,22	0,79
Education and training	2,86	0,74	2,12	2,43	0,52	1,27
Improved governmental legislation	2,29	0,97	2,21	1,43	0,37	0,53
Improved supplier relationships	1,43	1,27	1,81	0,86	1,84	1,57
Access to library	0,00	0,00	0,00	0,71	2,65	1,89

Table 60 Paired samples t-test for differences in potentially stimulating factors and positively experienced factors of TTO's

	Sig. (2-tailed)
Financial support	.052
Availability of partners to collaborate with	.760
Awareness of stakeholders of the organization	.028
Industrial sector initiatives	.594

Table 61 Goals of LSH

Goals of LSH	mean	CO VAR	stdev	rank
Create partnership in sector	5,00	0,00	0,00	2
Creary unity in the sector	5,00	0,00	0,00	3
Attract big foreign pharmaceutical companies to the Netherlands	5,00	0,00	0,00	4
Make the Dutch LSH sector a hotspot for investments	5,00	0,00	0,00	5
Create business awareness from top students to executives	4,67	0,12	0,58	6
Gain commitment from stakeholders	4,67	0,12	0,58	7
Become independent of government	3,00	0,33	1,00	8
Growth	2,00	0,00	0,00	1

Table 62 Goals of LSH for stakeholders

Goals of LSH for stakeholders	mean	co var	stdev	ranki
Investigate what the hurdles are for stakeholders	5,00	0,00	0,00	3
Increase number of collaborations between different stakeholders	4,67	0,12	0,58	6
Provide facts, figures and useful links for stakeholder	4,33	0,13	0,58	7
Provide international support to stakeholders	4,33	0,13	0,58	8
Find collaborating partner for stakeholders	4,00	0,00	0,00	1
Provide useful trainings for stakeholders	4,00	0,00	0,00	2
Attract top students to the Netherlands	4,00	0,00	0,00	4
Mediate in linking high qualified employees to stakeholder	4,00	0,00	0,00	5
Simplify licensing of knowledge	4,00	0,25	1,00	9
Simplify patenting of knowledge	4,00	0,25	1,00	10
Reduce animal testing	3,00	0,33	1,00	11

Table 63 Perception of LSH of goals of SME's

Goals	LSH for SME			
	mean	co var	stdev	ranki
<b>Goals for now</b>				
Bring product(s) to the market	5,00	0,00	0,00	2
Profitability	5,00	0,00	0,00	1
Funding	4,80	0,09	0,45	3
Discover scientific breakthrough	4,60	0,12	0,55	5
Patents	4,60	0,12	0,55	7
Networking	4,60	0,12	0,55	6
Find (highly qualified) personnel	4,40	0,12	0,55	8
Licenses	4,20	0,11	0,45	4
Find collaborating partner	4,00	0,18	0,71	9
Improve business skills	4,00	0,31	1,22	10
Growth	3,80	0,34	1,30	12
Improve industrial skills	2,80	0,47	1,30	14
Increase the use of knowledge created by the organization	2,60	0,44	1,14	13
Transfer knowledge to industry/other organizations	2,60	0,52	1,34	16
Improve academic skills	2,60	0,52	1,34	15
Create awareness of researchers for commercialization	2,20	0,59	1,30	17
Move to foreign country	1,60	0,34	0,55	11
Correlation coefficient = -0,97				

Table 64 Perception of LSH of goals of RI's

Goals	LSH for RI			
	mean	co var	stdev	ranki
<b>Goals for now</b>				
Networking	5	0,00	0,00	4
Funding	4,4	0,12	0,55	6
Create awareness of researchers for commercialization	4	0,00	0,00	5
Find collaborating partner	3,6	0,15	0,55	7
Find (highly qualified) personnel	3,6	0,15	0,55	8
Improve business skills	3,6	0,15	0,55	9
Improve industrial skills	3,6	0,25	0,89	10
Improve academic skills	3,2	0,26	0,84	11
Increase the use of knowledge created by the organization	2,2	0,75	1,64	17
Patents	1,6	0,34	0,55	12
Licenses	1,6	0,34	0,55	13
Transfer knowledge to industry/other organizations	1,6	0,34	0,55	14
Growth	1,4	0,39	0,55	16
Bring product(s) to the market	1,2	0,37	0,45	15
Discover scientific breakthrough	1	0,00	0,00	1
Move to foreign country	1	0,00	0,00	2
Profitability	1	0,00	0,00	3
Correlation coefficient = -0,93				

Table 65 Perception of LSH of goals of TTO's

Goals	LSH for TTO			
	mean	co var	stdev	ranking
<b>Goals for now</b>				
Patents	5	0,00	0,00	1
Licenses	5	0,00	0,00	2
Networking	5	0,00	0,00	5
Find collaborating partner	4,6	0,12	0,55	6
Transfer knowledge to industry/other organizations	4,6	0,12	0,55	7
Increase the use of knowledge created by the organization	4,6	0,12	0,55	8
Create awareness of researchers for commercialization	4,6	0,12	0,55	9
Funding	4,6	0,12	0,55	10
Discover scientific breakthrough	4,4	0,12	0,55	11
Find (highly qualified) personnel	4	0,00	0,00	3
Bring product(s) to the market	3,2	0,34	1,10	12
Improve business skills	3,2	0,51	1,64	13
Profitability	3,2	0,51	1,64	14
Improve industrial skills	3,2	0,56	1,79	17
Growth	2,6	0,52	1,34	15
Improve academic skills	2,6	0,52	1,34	16
Move to foreign country	1	0,00	0,00	4

Table 66 Perception of LSH of achievement of the goals of SME's

Barriers	LSH for SME			
	mean	co var	stdev	ranking
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	0,55	3
Find collaborating partner	3,80	0,12	0,45	2
Licenses	3,60	0,15	0,55	4
Improve academic skills	3,60	0,25	0,89	9
Improve business skills	3,60	0,42	1,52	12
Patents	3,40	0,16	0,55	6
Increase the use of knowledge created by the organization	3,00	0,00	0,00	1
Transfer knowledge to industry/other organizations	2,80	0,16	0,45	5
Improve industrial skills	2,80	0,30	0,84	11
Find (highly qualified) personnel	2,60	0,21	0,55	8
Create awareness of researchers for commercialization	2,60	0,21	0,55	7
Bring product(s) to the market	2,60	0,52	1,34	14
Growth	2,20	0,59	1,30	16
Profitability	1,80	0,25	0,45	10
Funding	1,80	0,46	0,84	13
Move to foreign country	1,60	0,56	0,89	15
Discover scientific breakthrough	1,40	0,64	0,89	17
Correlation coefficient = -0,97				

Table 67 Comparison of importance of goals and achievement of goals of SME's, according to LSH

Goals of SME's according to LSH  indicator	Goals for now		Achievement of goals	
	mean	co var	mean	co var
Bring product(s) to the market	5,00	0,00	2,60	0,52
Profitability	5,00	0,00	1,80	0,25
Funding	4,80	0,09	1,80	0,46
Discover scientific breakthrough	4,60	0,12	1,40	0,64
Patents	4,60	0,12	3,40	0,16
Networking	4,60	0,12	4,60	0,12
Find (highly qualified) personnel	4,40	0,12	2,60	0,21
Licenses	4,20	0,11	3,60	0,15
Find collaborating partner	4,00	0,18	3,80	0,12
Improve business skills	4,00	0,31	3,60	0,42
Growth	3,80	0,34	2,20	0,59
Improve industrial skills	2,80	0,47	2,80	0,30
Increase the use of knowledge created by the organization	2,60	0,44	3,00	0,00
Transfer knowledge to industry/other organizations	2,60	0,52	2,80	0,16
Improve academic skills	2,60	0,52	3,60	0,25
Create awareness of researchers for commercialization	2,20	0,59	2,60	0,21
Move to foreign country	1,60	0,34	1,60	0,56

Table 68 Perception of LSH of the achievement of the goals of RI's

Barriers	LSH for RI			
	mean	co var	stdev	ranking
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	0,55	8
Find collaborating partner	4,40	0,12	0,55	9
Bring product(s) to the market	4,00	0,25	1,00	12
Create awareness of researchers for commercialization	3,40	0,16	0,55	10
Funding	3,20	0,26	0,84	13
Improve business skills	3,00	0,00	0,00	6
Improve academic skills	3,00	0,00	0,00	7
Find (highly qualified) personnel	3,00	0,33	1,00	14
Improve industrial skills	2,40	0,23	0,55	11
Increase the use of knowledge created by the organization	2,00	0,50	1,00	17
Transfer knowledge to industry/other organizations	1,60	0,34	0,55	15
Profitability	1,40	0,39	0,55	16
Growth	1,00	0,00	0,00	1
Discover scientific breakthrough	1,00	0,00	0,00	2
Patents	1,00	0,00	0,00	3
Licenses	1,00	0,00	0,00	4
Move to foreign country	1,00	0,00	0,00	5
Correlation coefficient = -0,95				

Table 69 Comparison of importance of goals and achievement of goals of RI's, according to LSH

Goals of RI's according to LSH indicator	Goals for now		Achievement of goals	
	mean	co var	mean	co var
Networking	5	0,00	4,60	0,12
Funding	4,4	0,12	3,20	0,26
Create awareness of researchers for commercialization	4	0,00	3,40	0,16
Find collaborating partner	3,6	0,15	4,40	0,12
Find (highly qualified) personnel	3,6	0,15	3,00	0,33
Improve business skills	3,6	0,15	3,00	0,00
Improve industrial skills	3,6	0,25	2,40	0,23
Improve academic skills	3,2	0,26	3,00	0,00
Increase the use of knowledge created by the organization	2,2	0,75	2,00	0,50
Patents	1,6	0,34	1,00	0,00
Licenses	1,6	0,34	1,00	0,00
Transfer knowledge to industry/other organizations	1,6	0,34	1,60	0,34
Growth	1,4	0,39	1,00	0,00
Bring product(s) to the market	1,2	0,37	4,00	0,25
Discover scientific breakthrough	1	0,00	1,00	0,00
Move to foreign country	1	0,00	1,00	0,00
Profitability	1	0,00	1,40	0,39

Table 70 Perception of LSH the achievement of the goals of TTO's

Barriers	LSH for TTO			
	mean	co var	stdev	ranking
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	0,55	4
Find collaborating partner	3,60	0,15	0,55	5
Transfer knowledge to industry/other organizations	3,60	0,15	0,55	6
Improve academic skills	3,00	0,00	0,00	2
Create awareness of researchers for commercialization	3,00	0,00	0,00	3
Increase the use of knowledge created by the organization	3,00	0,53	1,58	14
Improve business skills	2,80	0,16	0,45	7
Find (highly qualified) personnel	2,80	0,30	0,84	9
Patents	2,60	0,58	1,52	15
Licenses	2,60	0,58	1,52	16
Funding	2,00	0,35	0,71	10
Bring product(s) to the market	2,00	0,50	1,00	13
Growth	2,00	0,61	1,22	17
Improve industrial skills	1,80	0,25	0,45	8
Profitability	1,40	0,39	0,55	12
Discover scientific breakthrough	1,20	0,37	0,45	11
Move to foreign country	1,00	0,00	0,00	1
Correlation coefficient = -0,99				

Table 71 Comparison of importance of goals and achievement of goals of TTO's, according to LSH

Goals of TTO's according to LSH	Goals for now		Achievement of goals	
	mean	co var	mean	co var
<b>indicator</b>				
Patents	5	0,00	2,60	0,58
Licenses	5	0,00	2,60	0,58
Networking	5	0,00	4,60	0,12
Find collaborating partner	4,6	0,12	3,60	0,15
Transfer knowledge to industry/other organizations	4,6	0,12	3,60	0,15
Increase the use of knowledge created by the organization	4,6	0,12	3,00	0,53
Create awareness of researchers for commercialization	4,6	0,12	3,00	0,00
Funding	4,6	0,12	2,00	0,35
Discover scientific breakthrough	4,4	0,12	1,20	0,37
Find (highly qualified) personnel	4	0,00	2,80	0,30
Bring product(s) to the market	3,2	0,34	2,00	0,50
Improve business skills	3,2	0,51	2,80	0,16
Profitability	3,2	0,51	1,40	0,39
Improve industrial skills	3,2	0,56	1,80	0,25
Growth	2,6	0,52	2,00	0,61
Improve academic skills	2,6	0,52	3,00	0,00
Move to foreign country	1	0,00	1,00	0,00

Table 72 Perception of LSH of the causes of the inability to fulfill the goals of SME's

Barriers	LSH for SME			
	mean	co var	stdev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
A lack of financial resources	5,00	0,00	0,00	1
A lack of continuity of financial flows	4,20	0,11	0,45	5
Lack of access to highly qualified employees	4,00	0,00	0,00	4
Legislation problems	4,00	0,00	0,00	3
Stacking of subsidies/grants	4,00	0,00	0,00	2
Lack of highly qualified employees	3,80	0,12	0,45	7
No flexibility in using foreground IP	3,80	0,12	0,45	6
Problems with licensing	3,60	0,15	0,55	8
Too little knowledge about business opportunities	3,20	0,34	1,10	16
Problems with patenting	3,00	0,53	1,58	19
Not the right technology	2,80	0,16	0,45	10
Not able to transfer knowledge to other organizations	2,80	0,16	0,45	9
Lack of business skills	2,80	0,53	1,48	20
Not able to find service partner (legal, economic, marketing, etc)	2,60	0,21	0,55	13
No access to scientific papers	2,60	0,21	0,55	15
No access to progress of competitors	2,60	0,21	0,55	14
Not able to find the right collaboration partner	2,20	0,20	0,45	12
Not enough cooperation partners	2,20	0,20	0,45	11
A shortage of networking capabilities	2,00	0,35	0,71	18
Too little knowledge about research	1,60	0,34	0,55	17
Correlation coefficient = -0,94				

Table 73 Perception of LSH of the causes of the inability to fulfill the goals of RI's

Barriers	LSH for RI			
	mean	co var	stdev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
Not enough cooperation partners	2,80	0,39	1,10	12
Lack of business skills	2,60	0,21	0,55	5
Stacking of subsidies/grants	2,60	0,21	0,55	6
Not able to find the right collaboration partner	2,40	0,63	1,52	19
Legislation problems	2,40	0,63	1,52	20
Lack of highly qualified employees	2,00	0,00	0,00	2
Not able to find service partner (legal, economic, marketing, etc)	2,00	0,50	1,00	17
Not able to transfer knowledge to other organizations	2,00	0,50	1,00	18
Lack of access to highly qualified employees	1,80	0,46	0,84	15
A lack of continuity of financial flows	1,80	0,46	0,84	16
A lack of financial resources	1,60	0,34	0,55	7
Too little knowledge about business opportunities	1,60	0,34	0,55	8
Too little knowledge about research	1,40	0,39	0,55	11
No access to progress of competitors	1,40	0,39	0,55	13
No flexibility in using foreground IP	1,40	0,39	0,55	14
Problems with patenting	1,20	0,37	0,45	9
Problems with licensing	1,20	0,37	0,45	10
A shortage of networking capabilities	1,00	0,00	0,00	1
Not the right technology	1,00	0,00	0,00	3
No access to scientific papers	1,00	0,00	0,00	4
Correlation coefficient = -0,95				

Table 74 Perception of LSH of the causes of the inability to fulfill the goals of TTO's

Barriers	LSH for TTO			
	mean	co var	stdev	ranking
<b>Problems that cause the inability to fulfill the goals</b>				
Lack of highly qualified employees	4,00	0,00	0,00	1
Lack of access to highly qualified employees	4,00	0,00	0,00	2
Not able to find the right collaboration partner	3,80	0,12	0,45	3
A lack of financial resources	3,60	0,15	0,55	4
Too little knowledge about business opportunities	3,40	0,16	0,55	5
Not enough cooperation partners	3,40	0,16	0,55	6
Legislation problems	3,40	0,16	0,55	7
No flexibility in using foreground IP	3,40	0,16	0,55	8
Too little knowledge about research	3,20	0,26	0,84	10
Not able to transfer knowledge to other organizations	3,20	0,26	0,84	11
Problems with licensing	3,20	0,26	0,84	12
Stacking of subsidies/grants	3,20	0,34	1,10	18
Lack of business skills	3,00	0,33	1,00	15
No access to progress of competitors	3,00	0,33	1,00	16
A lack of continuity of financial flows	2,80	0,30	0,84	13
Problems with patenting	2,80	0,30	0,84	14
Not the right technology	2,60	0,52	1,34	20
Not able to find service partner (legal, economic, marketing, etc)	2,40	0,23	0,55	9
A shortage of networking capabilities	1,60	0,34	0,55	17
No access to scientific papers	1,40	0,39	0,55	19
Correlation coefficient = -0,96				

Table 75 Perception of LSH of potentially stimulating factors of SME's

Stimuli	LSH for SME			
	mean	co var	stdev	ranking
<b>Factors with positive influence on the organization</b>				
Improved governmental legislation	4,40	0,12	0,55	3
Financial support	4,40	0,12	0,55	4
Availability of partners to collaborate with	3,80	0,12	0,45	2
Access to library	3,60	0,15	0,55	6
Awareness of the organization by others	3,20	0,14	0,45	5
Improved supplier relationships	3,20	0,56	1,79	7
Industrial sector initiatives	3,00	0,00	0,00	1
Education and training	2,80	0,59	1,64	8
Correlation coefficient = -0,85				

Table 76 Perception of LSH of positively experienced factors of SME's

Stimuli	LSH for SME			
	mean	co var	stdev	ranking
<b>Positively experienced factors</b>				
Availability of partners to collaborate with	3,80	0,12	0,45	2
Access to library	3,80	0,22	0,84	6
Financial support	3,60	0,15	0,55	4
Awareness of the organization by others	3,40	0,16	0,55	5
Improved supplier relationships	3,20	0,14	0,45	3
Education and training	3,20	0,26	0,84	7
Improved governmental legislation	3,20	0,34	1,10	8
Industrial sector initiatives	3,00	0,00	0,00	1
Correlation coefficient = -0,96				

Table 77 Comparison of potentially stimulating factors and positively experienced factors of SME's, according to LSH

Stimuli of SME's according to LSH	Stimulating factors		Experience d factors	
	mean	co var	mean	co var
Improved governmental legislation	4,40	0,12	3,20	0,34
Financial support	4,40	0,12	3,60	0,15
Availability of partners to collaborate with	3,80	0,12	3,80	0,12
Access to library	3,60	0,15	3,80	0,22
Awareness of the organization by others	3,20	0,14	3,40	0,16
Improved supplier relationships	3,20	0,56	3,20	0,14
Industrial sector initiatives	3,00	0,00	3,00	0,00
Education and training	2,80	0,59	3,20	0,26

Table 78 Perception of LSH of potentially positively stimulating factors for RI's

Stimuli	LSH for RI			
	mean	co var	stdev	ranking
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,60	0,12	0,55	2
Awareness of the organization by others	4,60	0,12	0,55	3
Financial support	4,20	0,26	1,10	4
Industrial sector initiatives	4,00	0,00	0,00	1
Education and training	3,00	0,33	1,00	5
Improved governmental legislation	2,80	0,73	2,05	8
Access to library	2,20	0,38	0,84	6
Improved supplier relationships	1,80	0,61	1,10	7
Correlation coefficient = -0,98				

Table 79 Perception of LSH of factors that are positively experienced by RI's

Stimuli	LSH for RI			
	mean	co var	stdev	ranking
<b>Positively experienced factors</b>				
Availability of partners to collaborate with	4,40	0,12	0,55	1
Industrial sector initiatives	4,40	0,12	0,55	2
Awareness of the organization by others	4,40	0,12	0,55	3
Financial support	4,00	0,25	1,00	4
Improved supplier relationships	2,60	0,34	0,89	5
Improved governmental legislation	2,60	0,84	2,19	8
Education and training	2,40	0,63	1,52	7
Access to library	1,80	0,61	1,10	6
Correlation coefficient = -0,95				

Table 80 Comparison of potentially stimulating factors and positively experienced factors of RI's, according to LSH

Stimuli of RI's according to LSH	Positive factors		Experienced factors	
	mean	co var	mean	co var
<b>Indicator</b>				
Availability of partners to collaborate with	4,60	0,12	4,40	0,12
Awareness of the organization by others	4,60	0,12	4,40	0,12
Financial support	4,20	0,26	4,00	0,25
Industrial sector initiatives	4,00	0,00	4,40	0,12
Education and training	3,00	0,33	2,40	0,63
Improved governmental legislation	2,80	0,73	2,60	0,84
Access to library	2,20	0,38	1,80	0,61
Improved supplier relationships	1,80	0,61	2,60	0,34

Table 81 Perception of LSH of potentially stimulating factors for TTO's

Stimuli	LSH for TTO			
	mean	co var	stdev	ranking
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,20	0,11	0,45	1
Improved governmental legislation	4,00	0,25	1,00	6
Awareness of the organization by others	3,80	0,22	0,84	2
Financial support	3,60	0,25	0,89	5
Industrial sector initiatives	3,00	0,24	0,71	3
Access to library	3,00	0,24	0,71	4
Education and training	3,00	0,53	1,58	7
Improved supplier relationships	2,80	0,53	1,48	8
Correlation coefficient = -0,87				

Table 82 Perception of LSH of positively experienced factors of TTO's

Stimuli	LSH for TTO			
	mean	co var	stdev	ranking
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,00	0,00	0,00	1
Awareness of the organization by others	3,60	0,15	0,55	2
Access to library	3,40	0,26	0,89	6
Education and training	3,20	0,41	1,30	7
Improved governmental legislation	3,00	0,53	1,58	8
Industrial sector initiatives	2,80	0,16	0,45	3
Improved supplier relationships	2,80	0,16	0,45	4
Financial support	2,80	0,16	0,45	5

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Table 83 Comparison of potentially stimulating factors and experienced factors of TTO's, according to LSH

Stimuli of TTO's according to LSH	Stimulating factors		Experienced factors	
	mean	co var	mean	co var
Availability of partners to collaborate with	4,20	0,11	4,00	0,00
Improved governmental legislation	4,00	0,25	3,00	0,53
Awareness of the organization by others	3,80	0,22	3,60	0,15
Financial support	3,60	0,25	2,80	0,16
Industrial sector initiatives	3,00	0,24	2,80	0,16
Access to library	3,00	0,24	3,40	0,26
Education and training	3,00	0,53	3,20	0,41
Improved supplier relationships	2,80	0,53	2,80	0,16

Table 84 Perception of LSH of awareness of SME's of the innovation program

Awareness	LSH for SME			
	mean	co var	stdev	ranking
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	2,60	0,21	0,55	3
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	1,80	0,25	0,45	4
Is the organization aware of the services of LSH?	1,00	0,00	0,00	2
Is the organization aware of the possibilities for the organization to make use of the	1,00	0,00	0,00	1

Table 85 Perception of LSH of awareness of RI's of the innovation program

Awareness	LSH for RI			
	mean	co var	stdev	ranking
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	4,60	0,12	0,55	3
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	4,20	0,26	1,10	4
Is the organization aware of the services of LSH?	2,00	0,00	0,00	1
Is the organization aware of the possibilities for the organization to make use of the	1,00	0,00	0,00	2

Table 86 Perception of LSH of the awareness of TTO's of the innovation program

Awareness	LSH for TTO			
	mean	co var	stdev	ranking
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	3,00	0,00	0,00	1
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,20	0,20	0,45	4
Is the organization aware of the services of LSH?	1,00	0,00	0,00	2
Is the organization aware of the possibilities for the organization to make use of the services?	1,00	0,00	0,00	3

Table 87 Perception of LSH of need for services by SME's

Services	LSH for SME			ranking
	mean	co var	stdev	
<b>Services needed by stakeholders</b>				
Information about companies in the Netherlands	5,00	0,00	0,00	1
Information about subsidies	5,00	0,00	0,00	9
Information about regulations and guidelines	5,00	0,00	0,00	2
Information about venture capitalists	5,00	0,00	0,00	4
Access to company database of the Netherlands	5,00	0,00	0,00	3
Financial support from government	4,60	0,12	0,55	13
News items about the sector	4,40	0,12	0,55	15
The possibility to find services that your organization needs	4,40	0,12	0,55	16
Access to a database to obtain information about progress concerning a certain target	4,40	0,12	0,55	14
Access to database to find venture capitalist	4,40	0,12	0,55	17
Facts and figures about the sector	4,20	0,31	1,30	23
The possibility to offer your services to other organizations	4,00	0,00	0,00	5
Information about education and trainings in the field of business skills	3,80	0,12	0,45	10
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,80	0,12	0,45	12
Access to a database for product information	3,80	0,12	0,45	11
Information about regional initiatives of the Netherlands	3,60	0,32	1,14	24
Information about education and trainings in the field of academic skills	3,40	0,16	0,55	19
Access to a database for patent information	3,40	0,53	1,82	31
Access to database to find collaborating partners	3,20	0,14	0,45	18
Information about sharing facilities with other companies	3,20	0,34	1,10	27
A market place where you can find qualified personnel	3,20	0,34	1,10	28
Post calls for (funding) proposals	3,20	0,51	1,64	30
A market place to offer inventions for licensing	3,00	0,33	1,00	26
A market place to find inventions to license	3,00	0,33	1,00	25
A market place to find partners in start of investigation to collaborate with	2,80	0,30	0,84	22
Support to move to foreign country	2,60	0,58	1,52	33
A market place to find materials that you can use	2,40	0,23	0,55	20
The possibility to advertise your company (e.g. on website, newsletter, etc)	2,40	0,23	0,55	21
Access to library to obtain scientific literature	2,20	0,50	1,10	29
Access to database to find incubators	2,20	0,59	1,30	34
A market place to offer your equipment to other organizations	2,00	0,00	0,00	8
A market place to find equipment that you can use	2,00	0,00	0,00	6
A market place to offer materials for other organizations	2,00	0,00	0,00	7
Access to database to find service organizations (legal, communication, etc)	2,00	0,61	1,22	35
Support to open new location in the Netherlands	1,60	0,56	0,89	32

Table 88 Perception of LSH of the need for services by RI's

Services	LSH for RI			ranking
	mean	co var	stdev	
<b>Services needed by stakeholders</b>				
Access to company database of the Netherlands	5,00	0,00	0,00	7
Information about companies in the Netherlands	4,60	0,12	0,55	9
Facts and figures about the sector	4,40	0,12	0,55	10
Financial support from government	4,40	0,12	0,55	11
Information about regional initiatives of the Netherlands	4,40	0,12	0,55	12
News items about the sector	4,00	0,00	0,00	1
Information about sharing facilities with other companies	4,00	0,00	0,00	2
Information about education and trainings in the field of business skills	3,80	0,12	0,45	8
Information about subsidies	3,80	0,43	1,64	31
Information about regulations and guidelines	3,80	0,43	1,64	32
The possibility to offer your services to other organizations	3,60	0,15	0,55	13
Access to database to find collaborating partners	3,60	0,15	0,55	14
Information about venture capitalists	3,60	0,42	1,52	30
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,40	0,16	0,55	15
Access to database to find service organizations (legal, communication, etc)	3,40	0,16	0,55	16
Access to database to find incubators	3,40	0,16	0,55	17
The possibility to find services that your organization needs	3,40	0,45	1,52	33
A market place where you can find qualified personnel	3,20	0,34	1,10	25
Access to a database to obtain information about progress concerning a certain target	3,20	0,34	1,10	26
Access to database to find venture capitalist	3,20	0,34	1,10	27
A market place to offer inventions for licensing	3,00	0,33	1,00	21
A market place to find inventions to license	3,00	0,33	1,00	22
Access to a database for product information	3,00	0,33	1,00	23
Access to a database for patent information	3,00	0,33	1,00	24
Information about education and trainings in the field of academic skills	2,60	0,21	0,55	18
A market place to find partners in start of investigation to collaborate with	2,60	0,21	0,55	19
A market place to find materials that you can use	2,40	0,23	0,55	20
Post calls for (funding) proposals	2,00	0,00	0,00	3
A market place to offer your equipment to other organizations	2,00	0,00	0,00	4
A market place to find equipment that you can use	2,00	0,00	0,00	5
A market place to offer materials for other organizations	2,00	0,00	0,00	6
Access to library to obtain scientific literature	2,00	0,50	1,00	34
Support to move to foreign country	1,80	0,61	1,10	35
Support to open new location in the Netherlands	1,40	0,39	0,55	28
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,40	0,39	0,55	29

Table 89 Perception of LSH of the need for services by TTO's

Services	LSH for TTO			
	mean	co var	stdev	ranking
<b>Services needed by stakeholders</b>				
Information about venture capitalists	5,00	0,00	0,00	3
Access to company database of the Netherlands	5,00	0,00	0,00	4
Information about companies in the Netherlands	4,60	0,12	0,55	5
Information about regulations and guidelines	4,60	0,12	0,55	6
Facts and figures about the sector	4,40	0,12	0,55	7
Financial support from government	4,40	0,12	0,55	8
The possibility to find services that your organization needs	4,40	0,12	0,55	9
Access to a database for product information	4,40	0,12	0,55	10
Access to a database to obtain information about progress concerning a certain target	4,40	0,12	0,55	11
Access to database to find venture capitalist	4,40	0,12	0,55	12
Access to a database for patent information	4,20	0,20	0,84	15
Information about subsidies	4,20	0,26	1,10	23
News items about the sector	4,00	0,00	0,00	1
Information about education and trainings in the field of business skills	4,00	0,00	0,00	2
Access to database to find collaborating partners	3,80	0,22	0,84	17
Information about regional initiatives of the Netherlands	3,40	0,16	0,55	13
Information about sharing facilities with other companies	3,40	0,16	0,55	14
The possibility to offer your services to other organizations	3,20	0,34	1,10	27
A market place where you can find qualified personnel	3,20	0,34	1,10	28
A market place to offer inventions for licensing	3,20	0,34	1,10	29
A market place to find inventions to license	3,20	0,34	1,10	30
Post calls for (funding) proposals	3,20	0,51	1,64	32
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,00	0,33	1,00	25
Access to database to find service organizations (legal, communication, etc)	3,00	0,33	1,00	26
A market place to find partners in start of investigation to collaborate with	2,80	0,30	0,84	24
Access to database to find incubators	2,60	0,21	0,55	16
Information about education and trainings in the field of academic skills	2,40	0,23	0,55	18
Access to library to obtain scientific literature	2,20	0,59	1,30	33
A market place to find materials that you can use	2,00	0,71	1,41	35
A market place to offer your equipment to other organizations	1,80	0,25	0,45	19
A market place to find equipment that you can use	1,80	0,25	0,45	20
A market place to offer materials for other organizations	1,80	0,25	0,45	21
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,80	0,25	0,45	22
Support to move to foreign country	1,80	0,61	1,10	34
Support to open new location in the Netherlands	1,40	0,39	0,55	31

Table 90 Perception of LSH of the vision of LSH held by SME's

Vision	LSH for SME			
	mean	co var	stdev	ranking
<b>Vision of stakeholders towards LSH</b>				
My company could benefit from LSH, but would survive without is as well	4,40	0,12	0,55	3
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,20	0,11	0,45	2
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	4,00	0,25	1,00	7
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,60	0,15	0,55	6
Is LSH useful for your organization?	3,20	0,14	0,45	4
Do you think you will make use of the services of LSH in the future?	3,20	0,14	0,45	5
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,20	0,26	0,84	8
Do you think that the objectives of LSH will bear fruit?	3,00	0,53	1,58	13
LSH provides comparable services as another organization that my company makes use of	2,80	0,30	0,84	9
I will make use of education and trainings provided by LSH	2,60	0,52	1,34	12
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,20	0,59	1,30	14
LSH provides comparable services as my organization	1,60	0,34	0,55	10
Is LSH a threat to your organization?	1,40	0,39	0,55	11
LSH is a competitor of my company	1,00	0,00	0,00	1

Table 91 Perception of LSH of the vision of LSH held by RI's

Vision	LSH for RI			
	mean	co var	stdev	ranking
<b>Vision of stakeholders towards LSH</b>				
LSH provides comparable services as my organization	5,00	0,00	0,00	2
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,60	0,12	0,55	4
LSH is a competitor of my company	4,40	0,12	0,55	5
My company could benefit from LSH, but would survive without is as well	4,00	0,00	0,00	3
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,40	0,16	0,55	7
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,40	0,16	0,55	8
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,40	0,16	0,55	9
Is LSH useful for your organization?	3,20	0,14	0,45	6
Do you think you will make use of the services of LSH in the future?	3,00	0,00	0,00	1
LSH provides comparable services as another organization that my company makes use of	3,00	0,33	1,00	11
Is LSH a threat to your organization?	3,00	0,67	2,00	14
Do you think that the objectives of LSH will bear fruit?	2,60	0,21	0,55	10
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,20	0,50	1,10	13
I will make use of education and trainings provided by LSH	1,40	0,39	0,55	12

Table 92 Perception of LSH of the vision of LSH held by TTO's

Vision	LSH for TTO			
	mean	co var	stdev	ranking
<b>Vision of stakeholders towards LSH</b>				
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,60	0,12	0,55	1
LSH provides comparable services as my organization	3,60	0,15	0,55	4
My company could benefit from LSH, but would survive without is as well	3,60	0,15	0,55	5
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,60	0,15	0,55	6
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,60	0,15	0,55	7
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,40	0,16	0,55	8
Is LSH useful for your organization?	3,20	0,14	0,45	2
Do you think you will make use of the services of LSH in the future?	3,20	0,14	0,45	3
Do you think that the objectives of LSH will bear fruit?	2,60	0,21	0,55	9
LSH provides comparable services as another organization that my company makes use of	2,60	0,21	0,55	10
Is LSH a threat to your organization?	2,60	0,58	1,52	13
LSH is a competitor of my company	2,60	0,58	1,52	14
I will make use of education and trainings provided by LSH	2,40	0,23	0,55	11
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,00	0,50	1,00	12

Table 93 Services provided by LSH

Services of LSH	mean	covar	stdev	ranking
Access to company database of the Netherlands	5,00	0,00	0,00	1
Information about companies in the Netherlands	4,73	0,10	0,46	4
Information about venture capitalists	4,53	0,23	1,06	17
Financial support from government	4,47	0,12	0,52	5
Information about regulations and guidelines	4,47	0,24	1,06	19
Facts and figures about the sector	4,33	0,19	0,82	10
Information about subsidies	4,33	0,27	1,18	23
News items about the sector	4,13	0,09	0,35	2
The possibility to find services that your organization needs	4,07	0,25	1,03	21
Access to a database to obtain information about progress concerning a certain target	4,00	0,23	0,93	15
Access to database to find venture capitalist	4,00	0,23	0,93	16
Information about education and trainings in the field of business skills	3,87	0,09	0,35	3
Information about regional initiatives of the Netherlands	3,80	0,23	0,86	14
Access to a database for product information	3,73	0,24	0,88	18
The possibility to offer your services to other organizations	3,60	0,20	0,74	11
Access to database to find collaborating partners	3,53	0,18	0,64	9
Information about sharing facilities with other companies	3,53	0,21	0,74	12
Access to a database for patent information	3,53	0,37	1,30	29
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,40	0,22	0,74	13
A market place where you can find qualified personnel	3,20	0,32	1,01	26
A market place to offer inventions for licensing	3,07	0,31	0,96	24
A market place to find inventions to license	3,07	0,31	0,96	25
Information about education and trainings in the field of academic skills	2,80	0,24	0,68	20
Access to database to find service organizations (legal, communication, etc)	2,80	0,39	1,08	30
Post calls for (funding) proposals	2,80	0,49	1,37	33
A market place to find partners in start of investigation to collaborate with	2,73	0,26	0,70	22
Access to database to find incubators	2,73	0,35	0,96	28
A market place to find materials that you can use	2,27	0,39	0,88	31
Access to library to obtain scientific literature	2,13	0,50	1,06	34
Support to move to foreign country	2,07	0,59	1,22	35
A market place to offer your equipment to other organizations	1,93	0,13	0,26	6
A market place to find equipment that you can use	1,93	0,13	0,26	7
A market place to offer materials for other organizations	1,93	0,13	0,26	8
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,87	0,34	0,64	27
Support to open new location in the Netherlands	1,47	0,44	0,64	32

Table 94 Goal asymmetry 1 - Goals of LSH compared with the goals of stakeholders

Goals of LSH	LSH	SME	RI	TTO	Goals of stakeholders for now
Growth	2	3,36	2,90	1,57	Growth
Create partnership in sector	5	3,18	4,60	3,43	Find collaborating partner
Create partnership in sector	5	4,36	4,90	4,57	Networking
Create business awareness from top students to executives	4,6	2,18	2,50	4,28	Improve business skills

Table 95 Goal asymmetry II - Goals of LSH compared with the achievement of the goals of stakeholders

Goals of LSH	LSH SME	RI	TTO	Barriers of stakeholders	
Growth	2	2,09	2,60	1,29	Growth
Create partnership in sector	5	3,73	3,00	2,57	Find collaborating partner
Create partnership in sector	5	4,45	3,60	3,29	Networking
Create business awareness from top students to executives	4,6	1,36	1,80	2,28	Improve business skills

Table 96 Goal asymmetry III - Goals of LSH for stakeholders compared with the goals of stakeholders

Goals of LSH for stakeholders	LSH SME	RI	TTO	Goals of stakeholders for now	
Find collaborating partner for stakeholders	4	3,18	4,60	3,43	Find collaborating partner
Provide useful trainings for stakeholders	4	2,18	2,50	4,29	Improve business skills
Provide useful trainings for stakeholders	4	1,73	1,20	1,29	Improve academic skills
Provide useful trainings for stakeholders	4	2,18	0,70	1,71	Improve industrial skills
Attract top students to the Netherlands	4	3,91	2,00	3,14	Find (highly qualified) personnel
Mediate in linking high qualified employees to stakeholder	4	3,91	2,00	3,14	Find (highly qualified) personnel
Simplify licensing of knowledge	4	3,18	0,60	4,71	Licenses
Simplify patenting of knowledge	4	3,27	1,00	4,57	Patents
Increase number of collaborations between different stakeholders	4,6	3,18	4,60	3,43	Find collaborating partner
Increase number of collaborations between different stakeholders	4,6	4,36	4,90	4,57	Networking
Provide international support to stakeholders	4,4	1,45	1,00	0,71	Move to foreign country

Table 97 Goal asymmetry IV - Goals of LSH for stakeholders compared with the achievement of the goals of stakeholders

Goals of LSH for stakeholders	LSH SME	RI	TTO	Barriers of stakeholders	
Find collaborating partner for stakeholders	4	3,73	3,00	2,57	Find collaborating partner
Provide useful trainings for stakeholders	4	1,36	1,80	2,29	Improve business skills
Provide useful trainings for stakeholders	4	1,18	1,00	2,00	Improve academic skills
Provide useful trainings for stakeholders	4	0,82	0,00	0,43	Improve industrial skills
Attract top students to the Netherlands	4	3,27	1,60	2,29	Find (highly qualified) personnel
Mediate in linking high qualified employees to stakeholder	4	3,27	1,60	2,29	Find (highly qualified) personnel
Simplify licensing of knowledge	4	2,00	0,10	3,71	Licenses
Simplify patenting of knowledge	4	2,73	0,80	3,86	Patents
Increase number of collaborations between different stakeholders	4,6	3,73	3,00	2,57	Find collaborating partner
Increase number of collaborations between different stakeholders	4,6	4,45	3,60	3,29	Networking
Provide international support to stakeholders	4,4	0,09	0,00	0,14	Move to foreign country

Table 98 Goal perception asymmetry between LSH and SME's

Goals	LSH for SME		SME's	
	mean	co var	mean	co var
<b>Goals for now</b>				
Bring product(s) to the market	5,00	0,00	3,36	0,43
Profitability	5,00	0,00	3,00	0,58
Funding	4,80	0,09	4,64	0,26
Discover scientific breakthrough	4,60	0,12	3,36	0,36
Networking	4,60	0,12	4,36	0,12
Patents	4,60	0,12	3,27	0,43
Find (highly qualified) personnel	4,40	0,12	3,91	0,18
Licenses	4,20	0,11	3,18	0,56
Find collaborating partner	4,00	0,18	3,18	0,46
Improve business skills	4,00	0,31	2,18	0,45
Growth	3,80	0,34	3,36	0,33
Improve industrial skills	2,80	0,47	2,18	0,67
Increase the use of knowledge created by the organization	2,60	0,44	2,36	0,61
Improve academic skills	2,60	0,52	1,73	0,37
Transfer knowledge to industry/other organizations	2,60	0,52	3,00	0,33
Create awareness of researchers for commercialization	2,20	0,59	2,27	0,56
Move to foreign country	1,60	0,34	1,45	0,64

Table 99 Barrier perception asymmetry between LSH and SME's - the achievement of the goals of SME's

Barriers	LSH for SME		SME's	
	mean	co var	mean	co var
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	4,45	0,12
Find collaborating partner	3,80	0,12	3,73	0,38
Licenses	3,60	0,15	2,00	0,95
Improve academic skills	3,60	0,25	1,18	1,41
Improve business skills	3,60	0,42	1,36	1,15
Patents	3,40	0,16	2,73	0,68
Increase the use of knowledge created by the organization	3,00	0,00	1,64	1,10
Transfer knowledge to industry/other organizations	2,80	0,16	1,27	1,22
Improve industrial skills	2,80	0,30	0,82	1,71
Create awareness of researchers for commercialization	2,60	0,21	1,00	1,41
Find (highly qualified) personnel	2,60	0,21	3,27	0,48
Bring product(s) to the market	2,60	0,52	1,82	1,04
Growth	2,20	0,59	2,09	0,89
Profitability	1,80	0,25	1,18	1,19
Funding	1,80	0,46	2,00	0,55
Move to foreign country	1,60	0,56	0,09	3,32
Discover scientific breakthrough	1,40	0,64	2,18	0,84

Table 100 Barrier perception asymmetry between LSH and SME's – causes of the inability to fulfill the goals of SME's

Barriers	LSH for SME		SME's	
	mean	CO VAR	mean	CO VAR
<b>Problems that cause the inability to fulfill the goals</b>				
A lack of financial resources	5,00	0,00	3,82	0,33
A lack of continuity of financial flows	4,20	0,11	3,64	0,46
Lack of access to highly qualified employees	4,00	0,00	2,27	0,63
Legislation problems	4,00	0,00	2,64	0,62
Stacking of subsidies/grants	4,00	0,00	1,91	1,03
Lack of highly qualified employees	3,80	0,12	2,55	0,57
No flexibility in using foreground IP	3,80	0,12	1,45	1,21
Problems with licensing	3,60	0,15	1,64	0,74
Too little knowledge about business opportunities	3,20	0,34	1,82	0,73
Problems with patenting	3,00	0,53	1,55	0,67
Not able to transfer knowledge to other organizations	2,80	0,16	1,55	0,93
Not the right technology	2,80	0,16	1,09	0,76
Lack of business skills	2,80	0,53	1,82	0,88
No access to progress of competitors	2,60	0,21	1,73	0,78
No access to scientific papers	2,60	0,21	1,73	0,58
Not able to find service partner (legal, economic, marketing, etc)	2,60	0,21	1,18	0,91
Not able to find the right collaboration partner	2,20	0,20	1,73	0,69
Not enough cooperation partners	2,20	0,20	1,82	0,59
A shortage of networking capabilities	2,00	0,35	1,36	0,59
Too little knowledge about research	1,60	0,34	1,10	0,80

Table 101 Differences in importance of the goals and achievement of the goals between LSH and SME's

Goals	LSH for SME's			SME's		
	goals	Barriers	difference	Goals	Barriers	difference
<b>Goals for now</b>						
Growth	3,80	2,20	1,60	3,36	2,09	1,27
Discover scientific breakthrough	4,60	1,40	3,20	3,36	2,18	1,18
Patents	4,60	3,40	1,20	3,27	2,73	0,55
Licenses	4,20	3,60	0,60	3,18	2,00	1,18
Bring product(s) to the market	5,00	2,60	2,40	3,36	1,82	1,55
Find collaborating partner	4,00	3,80	0,20	3,18	3,73	-0,55
Find (highly qualified) personnel	4,40	2,60	1,80	3,91	3,27	0,64
Transfer knowledge to industry/other organizations	2,60	2,80	-0,20	3,00	1,27	1,73
Increase the use of knowledge created by the organization	2,60	3,00	-0,40	2,36	1,64	0,73
Move to foreign country	1,60	1,60	0,00	1,45	0,09	1,36
Improve business skills	4,00	3,60	0,40	2,18	1,36	0,82
Improve academic skills	2,60	3,60	-1,00	1,73	1,18	0,55
Profitability	5,00	1,80	3,20	3,00	1,18	1,82
Networking	4,60	4,60	0,00	4,36	4,43	-0,09
Create awareness of researchers for commercialization	2,20	2,60	-0,40	2,27	1,00	1,27
Improve industrial skills	2,80	2,80	0,00	2,18	0,82	1,36
Funding	4,80	1,80	3,00	4,64	2,00	2,64

Table 102 Stimuli perception asymmetry between LSH and SME's - potentially stimulating factors of SME's

Stimuli	LSH for SME		SME's	
	mean	co var	mean	co var
<b>Factors with positive influence on the organization</b>				
Financial support	4,40	0,12	4,27	0,24
Improved governmental legislation	4,40	0,12	3,00	0,63
Availability of partners to collaborate with	3,80	0,12	4,18	0,34
Access to library	3,60	0,15	4,18	0,10
Awareness of the organization by others	3,20	0,14	2,09	1,01
Improved supplier relationships	3,20	0,56	2,55	0,73
Industrial sector initiatives	3,00	0,00	3,00	0,61
Education and training	2,80	0,59	2,82	0,67

Table 103 Stimuli perception asymmetry between LSH and SME's – positively experienced factors of SME's

Stimuli	LSH for SME		SME's	
	mean	co var	mean	co var
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	3,80	0,12	4,18	0,28
Access to library	3,80	0,22	3,82	0,23
Financial support	3,60	0,15	3,09	0,40
Awareness of the organization by others	3,40	0,16	1,91	1,03
Improved supplier relationships	3,20	0,14	2,09	0,78
Education and training	3,20	0,26	2,27	0,81
Improved governmental legislation	3,20	0,34	1,64	1,00
Industrial sector initiatives	3,00	0,00	2,00	0,77

Table 104 Differences in potentially stimulating factors and positively experienced factors between LSH and SME's

Stimuli	LSH for SME's			SME's		
	goals	Barriers	difference	Goals	Barriers	difference
<b>Factors with positive influence on the organization</b>						
Financial support	4,40	3,60	0,80	4,27	3,09	1,18
Improved governmental legislation	4,40	3,20	1,20	3,00	1,64	1,36
Availability of partners to collaborate with	3,80	3,80	0,00	4,18	4,18	0,00
Access to library	3,60	3,80	-0,20	4,18	3,82	0,36
Awareness of the organization by others	3,20	3,40	-0,20	2,09	1,91	0,18
Improved supplier relationships	3,20	3,20	0,00	2,55	2,09	0,45
Industrial sector initiatives	3,00	3,00	0,00	3,00	2,00	1,00
Education and training	2,80	3,20	-0,40	2,82	2,27	0,55

Table 105 Awareness perception asymmetry between LSH and SME's

Awareness	LSH for SME		SME's	
	mean	CO VAR	mean	CO VAR
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	2,60	0,25	2,64	0,39
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	1,80	0,21	2,18	0,45
Is the organization aware of the possibilities for the organization to make use of the services?	1,00	0,00	2,18	0,61
Is the organization aware of the services of LSH?	1,00	0,00	2,27	0,56

Table 106 Service perception asymmetry between LSH and SME's

Services	LSH for SME		SME's	
	mean	CO VAR	mean	CO VAR
<b>Services needed by stakeholders</b>				
Access to company database of the Netherlands	5,00	0,00	2,55	0,69
Information about companies in the Netherlands	5,00	0,00	2,73	0,59
Information about regulations and guidelines	5,00	0,00	3,00	0,52
Information about subsidies	5,00	0,00	3,45	0,47
Information about venture capitalists	5,00	0,00	2,36	0,85
Financial support from government	4,60	0,12	3,82	0,40
Access to a database to obtain information about progress concerning a certain target	4,40	0,12	3,00	0,60
Access to database to find venture capitalist	4,40	0,12	2,00	0,89
News items about the sector	4,40	0,12	3,00	0,54
The possibility to find services that your organization needs	4,40	0,12	2,64	0,62
Facts and figures about the sector	4,20	0,31	3,00	0,52
The possibility to offer your services to other organizations	4,00	0,00	2,27	0,63
Access to a database for product information	3,80	0,12	2,00	0,84
Information about education and trainings in the field of business skills	3,80	0,12	2,00	0,92
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,80	0,12	2,00	0,92
Information about regional initiatives of the Netherlands	3,60	0,32	1,73	0,86
Information about education and trainings in the field of academic skills	3,40	0,16	1,73	0,90
Access to a database for patent information	3,40	0,53	2,64	0,73
Access to database to find collaborating partners	3,20	0,14	2,45	0,69
A market place where you can find qualified personnel	3,20	0,34	2,91	0,62
Information about sharing facilities with other companies	3,20	0,34	2,73	0,68
Post calls for (funding) proposals	3,20	0,51	2,64	0,80
A market place to find inventions to license	3,00	0,33	2,55	0,71
A market place to offer inventions for licensing	3,00	0,33	2,00	0,87
A market place to find partners in start of investigation to collaborate with	2,80	0,30	2,09	0,84
Support to move to foreign country	2,60	0,58	1,18	0,99
A market place to find materials that you can use	2,40	0,23	2,00	0,92
The possibility to advertise your company (e.g. on website, newsletter, etc)	2,40	0,23	1,45	0,89
Access to library to obtain scientific literature	2,20	0,50	3,82	0,37
Access to database to find incubators	2,20	0,59	1,64	0,83
A market place to find equipment that you can use	2,00	0,00	2,73	0,66
A market place to offer materials for other organizations	2,00	0,00	1,73	0,94
A market place to offer your equipment to other organizations	2,00	0,00	2,09	0,72
Access to database to find service organizations (legal, communication, etc)	2,00	0,61	2,00	0,87
Support to open new location in the Netherlands	1,60	0,56	1,55	1,02

Table 107 Vision perception asymmetry between LSH and SME's

Vision	LSH for SME		SME's	
	mean	CO VAR	mean	CO VAR
<b>Vision of stakeholders towards LSH</b>				
My company could benefit from LSH, but would survive without is as well	4,40	0,12	4,18	0,14
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,20	0,11	4,00	0,34
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	4,00	0,25	3,36	0,38
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,60	0,15	3,82	0,11
Do you think you will make use of the services of LSH in the future?	3,20	0,14	4,00	0,00
Is LSH useful for your organization?	3,20	0,14	3,73	0,13
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,20	0,26	3,82	0,11
Do you think that the objectives of LSH will bear fruit?	3,00	0,53	3,64	0,14
LSH provides comparable services as another organization that my company makes use of	2,80	0,30	2,73	0,44
I will make use of education and trainings provided by LSH	2,60	0,52	2,18	0,45
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,20	0,59	1,64	0,83
LSH provides comparable services as my organization	1,60	0,34	1,00	0,00
Is LSH a threat to your organization?	1,40	0,39	1,09	0,28
LSH is a competitor of my company	1,00	0,00	1,00	0,00

Table 108 Service compatibility

Services of LSH	LSH SME	RI	TTO	
Access to company database of the Netherlands	5,00	2,55	3,10	2,86
Information about companies in the Netherlands	4,73	2,73	4,30	4,29
Information about venture capitalists	4,53	2,36	2,70	3,86
Financial support from government	4,47	3,82	4,00	4,57
Information about regulations and guidelines	4,47	3,00	2,20	3,86
Facts and figures about the sector	4,33	3,00	4,00	4,29
Information about subsidies	4,33	3,45	3,80	4,29
News items about the sector	4,13	3,00	4,00	4,00
The possibility to find services that your organization needs	4,07	2,64	1,90	1,43
Access to a database to obtain information about progress concerning a certain target	4,00	3,00	1,50	3,14
Access to database to find venture capitalist	4,00	2,00	2,10	3,57
Information about education and trainings in the field of business skills	3,87	2,00	1,70	3,43
Information about regional initiatives of the Netherlands	3,80	1,73	3,00	2,71
Access to a database for product information	3,73	2,00	1,30	2,57
The possibility to offer your services to other organizations	3,60	2,27	2,10	1,86
Access to a database for patent information	3,53	2,64	0,90	2,43
Access to database to find collaborating partners	3,53	2,45	2,70	3,71
Information about sharing facilities with other companies	3,53	2,73	2,40	2,71
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,40	2,00	1,90	2,43
A market place where you can find qualified personnel	3,20	2,91	2,30	2,57
A market place to find inventions to license	3,07	2,55	1,40	1,57
A market place to offer inventions for licensing	3,07	2,00	2,00	2,14
Access to database to find service organizations (legal, communication, etc)	2,80	2,00	0,80	1,43
Information about education and trainings in the field of academic skills	2,80	1,73	1,30	2,00
Post calls for (funding) proposals	2,80	2,64	1,60	1,86
A market place to find partners in start of investigation to collaborate with	2,73	2,09	2,20	2,43
Access to database to find incubators	2,73	1,64	1,50	3,29
A market place to find materials that you can use	2,27	2,00	1,80	1,71
Access to library to obtain scientific literature	2,13	3,82	1,60	1,57
Support to move to foreign country	2,07	1,18	1,44	1,29
A market place to find equipment that you can use	1,93	2,73	1,80	1,71
A market place to offer materials for other organizations	1,93	1,73	2,30	2,00
A market place to offer your equipment to other organizations	1,93	2,09	1,80	2,00
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,87	1,45	1,90	2,14
Support to open new location in the Netherlands	1,47	1,55	1,10	1,00

Table 109 Goal perception asymmetry between LSH and RI's

Goals	LSH for RI		RI's	
	mean	CO VAR	mean	CO VAR
<b>Goals for now</b>				
Networking	5	0,00	4,90	0,06
Funding	4,4	0,12	4,20	0,15
Create awareness of researchers for commercialization	4	0,00	3,90	0,41
Find (highly qualified) personnel	3,6	0,15	2,00	0,88
Find collaborating partner	3,6	0,15	4,60	0,11
Improve business skills	3,6	0,15	2,50	0,81
Improve industrial skills	3,6	0,25	0,70	1,36
Improve academic skills	3,2	0,26	1,20	1,17
Increase the use of knowledge created by the organization	2,2	0,75	2,80	0,75
Licenses	1,6	0,34	0,60	1,41
Patents	1,6	0,34	1,00	1,33
Transfer knowledge to industry/other organizations	1,6	0,34	4,40	0,16
Growth	1,4	0,39	2,90	0,70
Bring product(s) to the market	1,2	0,37	2,40	0,86
Discover scientific breakthrough	1	0,00	1,80	1,01
Move to foreign country	1	0,00	1,00	1,56
Profitability	1	0,00	0,80	1,29

Table 110 Barrier perception asymmetry between LSH and RI's – achievement of the goals of RI's

Barriers	LSH for RI		RI's	
	mean	CO VAR	mean	CO VAR
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	3,60	0,30
Find collaborating partner	4,40	0,12	3,00	0,50
Bring product(s) to the market	4,00	0,25	0,80	1,15
Create awareness of researchers for commercialization	3,40	0,16	1,50	0,72
Funding	3,20	0,26	1,80	0,44
Improve academic skills	3,00	0,00	1,00	1,70
Improve business skills	3,00	0,00	1,80	0,94
Find (highly qualified) personnel	3,00	0,33	1,60	0,94
Improve industrial skills	2,40	0,23	0,00	0,00
Increase the use of knowledge created by the organization	2,00	0,50	1,60	1,07
Transfer knowledge to industry/other organizations	1,60	0,34	2,80	0,33
Profitability	1,40	0,39	0,70	1,36
Discover scientific breakthrough	1,00	0,00	0,30	2,25
Growth	1,00	0,00	2,60	0,71
Licenses	1,00	0,00	0,10	3,16
Move to foreign country	1,00	0,00	0,00	0,00
Patents	1,00	0,00	0,80	2,02

Table 111 Differences in importance of the goals and achievement of the goals between LSH and RI's

Barriers	LSH for RI's			RI's		
	goals	barriers	difference	goals	barriers	difference
<b>Goals that are difficult to achieve</b>						
Networking	5	4,60	0,40	4,90	3,60	1,30
Funding	4,4	3,20	1,20	4,20	1,80	2,40
Create awareness of researchers for commercialization	4	3,40	0,60	3,90	1,50	2,40
Improve industrial skills	3,6	2,40	1,20	0,70	0,00	0,70
Find (highly qualified) personnel	3,6	3,00	0,60	2,00	1,60	0,40
Improve business skills	3,6	3,00	0,60	2,50	1,80	0,70
Find collaborating partner	3,6	4,40	-0,80	4,60	3,00	1,60
Improve academic skills	3,2	3,00	0,20	1,20	1,00	0,20
Increase the use of knowledge created by the organization	2,2	2,00	0,20	2,80	1,60	1,20
Patents	1,6	1,00	0,60	1,00	0,80	0,20
Licenses	1,6	1,00	0,60	0,60	0,10	0,50
Transfer knowledge to industry/other organizations	1,6	1,60	0,00	4,40	2,80	1,60
Growth	1,4	1,00	0,40	2,90	2,60	0,30
Bring product(s) to the market	1,2	4,00	-2,80	2,40	0,80	1,60
Discover scientific breakthrough	1	1,00	0,00	1,80	0,30	1,50
Move to foreign country	1	1,00	0,00	1,00	0,00	1,00
Profitability	1	1,40	-0,40	0,80	0,70	0,10

Table 112 Barrier perception asymmetry between LSH and RI's – causes of the inability to fulfill the goals of RI's

Barriers	LSH for RI		RI's	
	mean	co var	mean	co var
<b>Problems that cause the inability to fulfill the goals</b>				
Not enough cooperation partners	2,80	0,39	0,50	1,05
Lack of business skills	2,60	0,21	2,60	0,75
Stacking of subsidies/grants	2,60	0,21	2,90	0,75
Legislation problems	2,40	0,63	1,70	1,15
Not able to find the right collaboration partner	2,40	0,63	1,10	1,32
Lack of highly qualified employees	2,00	0,00	1,50	1,14
Not able to find service partner (legal, economic, marketing, etc)	2,00	0,50	1,10	1,45
Not able to transfer knowledge to other organizations	2,00	0,50	1,80	1,07
A lack of continuity of financial flows	1,80	0,46	3,90	0,37
Lack of access to highly qualified employees	1,80	0,46	1,70	1,15
A lack of financial resources	1,60	0,34	2,00	0,97
Too little knowledge about business opportunities	1,60	0,34	3,50	0,36
No access to progress of competitors	1,40	0,39	0,60	1,17
No flexibility in using foreground IP	1,40	0,39	1,20	1,29
Too little knowledge about research	1,40	0,39	1,10	1,09
Problems with licensing	1,20	0,37	0,90	1,43
Problems with patenting	1,20	0,37	1,10	1,39
A shortage of networking capabilities	1,00	0,00	1,50	1,01
No access to scientific papers	1,00	0,00	0,90	1,43
Not the right technology	1,00	0,00	0,40	1,29

Table 113 Stimuli perception asymmetry between LSH and RI's – potentially stimulating factors of RI's

Stimuli	LSH for RI		RI's	
	mean	co var	mean	co var
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,60	0,12	4,50	0,12
Awareness of the organization by others	4,60	0,12	4,70	0,10
Financial support	4,20	0,26	4,00	0,37
Industrial sector initiatives	4,00	0,00	2,90	0,70
Education and training	3,00	0,33	2,50	0,89
Improved governmental legislation	2,80	0,73	3,10	0,70
Access to library	2,20	0,38	2,10	1,09
Improved supplier relationships	1,80	0,61	0,80	2,19

Table 114 Stimuli perception asymmetry between LSH and RI's – positively experienced factors of RI's

Stimuli	LSH for RI		RI's	
	mean	co var	mean	co var
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,40	0,12	4,40	0,19
Awareness of the organization by others	4,40	0,12	3,10	0,56
Industrial sector initiatives	4,40	0,12	2,70	0,74
Financial support	4,00	0,25	3,10	0,36
Improved supplier relationships	2,60	0,34	0,80	2,19
Improved governmental legislation	2,60	0,84	1,30	1,09
Education and training	2,40	0,63	1,70	1,11
Access to library	1,80	0,61	1,30	1,66

Table 115 Differences in potentially stimulating factors and positively experienced factors between LSH and RI's

Stimuli	LSH for RI's			RI's		
	goals	barriers	difference	goals	barriers	difference
<b>Factors with positive influence on the organization</b>						
Availability of partners to collaborate with	4,60	4,40	0,20	4,50	4,40	0,10
Awareness of the organization by others	4,60	4,40	0,20	4,70	3,10	1,60
Financial support	4,20	4,00	0,20	4,00	3,10	0,90
Industrial sector initiatives	4,00	4,40	-0,40	2,90	2,70	0,20
Education and training	3,00	2,40	0,60	2,50	1,70	0,80
Improved governmental legislation	2,80	2,60	0,20	3,10	1,30	1,80
Access to library	2,20	1,80	0,40	2,10	1,30	0,80
Improved supplier relationships	1,80	2,60	-0,80	0,80	0,80	0,00

Table 116 Awareness perception asymmetry between LSH and RI's

Awareness	LSH for RI		RI's	
	mean	CO VAR	mean	CO VAR
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	4,60	0,12	3,30	0,29
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	4,20	0,26	2,90	0,34
Is the organization aware of the services of LSH?	2,00	0,00	2,50	0,34
Is the organization aware of the possibilities for the organization to make use of the services?	1,00	0,00	2,50	0,34

Table 117 Service perception asymmetry between LSH and RI's

Services	LSH for RI		RI's	
	mean	CO VAR	mean	CO VAR
<b>Services needed by stakeholders</b>				
Access to company database of the Netherlands	5,00	0,00	3,10	0,65
Information about companies in the Netherlands	4,60	0,12	4,30	0,16
Facts and figures about the sector	4,40	0,12	4,00	0,37
Financial support from government	4,40	0,12	4,00	0,37
Information about regional initiatives of the Netherlands	4,40	0,12	3,00	0,70
Information about sharing facilities with other companies	4,00	0,00	2,40	0,93
News items about the sector	4,00	0,00	4,00	0,37
Information about education and trainings in the field of business skills	3,80	0,12	1,70	1,21
Information about regulations and guidelines	3,80	0,43	2,20	1,00
Information about subsidies	3,80	0,43	3,80	0,39
Access to database to find collaborating partners	3,60	0,15	2,70	0,80
The possibility to offer your services to other organizations	3,60	0,15	2,10	1,06
Information about venture capitalists	3,60	0,42	2,70	0,87
Access to database to find incubators	3,40	0,16	1,50	1,23
Access to database to find service organizations (legal, communication, etc)	3,40	0,16	0,80	1,54
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,40	0,16	1,90	1,09
The possibility to find services that your organization needs	3,40	0,45	1,90	1,12
A market place where you can find qualified personnel	3,20	0,34	2,30	0,94
Access to a database to obtain information about progress concerning a certain target	3,20	0,34	1,50	1,31
Access to database to find venture capitalist	3,20	0,34	2,10	1,04
A market place to find inventions to license	3,00	0,33	1,40	1,27
A market place to offer inventions for licensing	3,00	0,33	2,00	1,03
Access to a database for patent information	3,00	0,33	0,90	1,61
Access to a database for product information	3,00	0,33	1,30	1,31
A market place to find partners in start of investigation to collaborate with	2,60	0,21	2,20	0,93
Information about education and trainings in the field of academic skills	2,60	0,21	1,30	1,31
A market place to find materials that you can use	2,40	0,23	1,80	1,14
A market place to find equipment that you can use	2,00	0,00	1,80	1,14
A market place to offer materials for other organizations	2,00	0,00	2,30	0,94
A market place to offer your equipment to other organizations	2,00	0,00	1,80	1,14
Post calls for (funding) proposals	2,00	0,00	1,60	1,32
Access to library to obtain scientific literature	2,00	0,50	1,60	1,22
Support to move to foreign country	1,80	0,61	1,44	1,30
Support to open new location in the Netherlands	1,40	0,39	1,10	1,32
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,40	0,39	1,90	1,09

Table 118 Vision perception asymmetry between LSH and RI's

Vision	LSH for RI		RI's	
	mean	co var	mean	co var
<b>Vision of stakeholders towards LSH</b>				
LSH provides comparable services as my organization	5,00	0,00	3,80	0,21
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,60	0,12	3,80	0,37
LSH is a competitor of my company	4,40	0,12	2,00	0,53
My company could benefit from LSH, but would survive without is as well	4,00	0,00	3,70	0,31
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,40	0,16	3,60	0,37
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,40	0,16	3,30	0,43
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,40	0,16	3,60	0,40
Is LSH useful for your organization?	3,20	0,14	3,80	0,24
Do you think you will make use of the services of LSH in the future?	3,00	0,00	3,90	0,19
LSH provides comparable services as another organization that my company makes use of	3,00	0,33	2,30	0,65
Is LSH a threat to your organization?	3,00	0,67	2,20	0,56
Do you think that the objectives of LSH will bear fruit?	2,60	0,21	3,60	0,23
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,20	0,50	3,10	0,18
I will make use of education and trainings provided by LSH	1,40	0,39	2,60	0,41

Table 119 Goal perception asymmetry between LSH and TTO's

Goals	LSH for TTO		TTO's	
	mean	co var	mean	co var
<b>Goals for now</b>				
Licenses	5	0,00	4,71	0,10
Networking	5	0,00	4,57	0,12
Patents	5	0,00	4,57	0,12
Create awareness of researchers for commercialization	4,6	0,12	4,71	0,10
Find collaborating partner	4,6	0,12	3,43	0,53
Funding	4,6	0,12	3,57	0,53
Increase the use of knowledge created by the organization	4,6	0,12	4,00	0,46
Transfer knowledge to industry/other organizations	4,6	0,12	4,14	0,45
Discover scientific breakthrough	4,4	0,12	3,86	0,46
Find (highly qualified) personnel	4	0,00	3,14	0,47
Bring product(s) to the market	3,2	0,34	2,29	0,90
Improve business skills	3,2	0,51	4,29	0,18
Profitability	3,2	0,51	1,86	0,72
Improve industrial skills	3,2	0,56	1,71	0,99
Growth	2,6	0,52	1,57	0,72
Improve academic skills	2,6	0,52	1,29	0,74
Move to foreign country	1	0,00	0,71	0,68

Table 120 Barrier perception asymmetry between LSH and TTO's – achievement of the goals of TTO's

Barriers	LSH for TTO		TTO's	
	mean	co var	mean	co var
<b>Goals that are difficult to achieve</b>				
Networking	4,60	0,12	3,29	0,55
Find collaborating partner	3,60	0,15	2,57	0,74
Transfer knowledge to industry/other organizations	3,60	0,15	3,57	0,27
Create awareness of researchers for commercialization	3,00	0,00	2,57	0,21
Improve academic skills	3,00	0,00	2,00	1,26
Increase the use of knowledge created by the organization	3,00	0,53	2,86	0,71
Improve business skills	2,80	0,16	2,29	0,49
Find (highly qualified) personnel	2,80	0,30	2,29	0,60
Licenses	2,60	0,58	3,71	0,48
Patents	2,60	0,58	3,86	0,46
Funding	2,00	0,35	2,57	0,54
Bring product(s) to the market	2,00	0,50	1,71	0,87
Growth	2,00	0,61	1,29	1,72
Improve industrial skills	1,80	0,25	0,43	2,65
Profitability	1,40	0,39	2,00	1,00
Discover scientific breakthrough	1,20	0,37	3,29	0,46
Move to foreign country	1,00	0,00	0,14	2,65

Table 121 Differences in importance of the goals and achievement of the goals between LSH and TTO's

Goals	LSH for TTO			TTO's		
	goals	barriers	diffence	goals	barriers	Difference
<b>Goals for now</b>						
Licenses	5	2,60	2,40	4,71	3,71	1,00
Patents	5	2,60	2,40	4,57	3,86	0,71
Networking	5	4,60	0,40	4,57	3,29	1,29
Funding	4,6	2,00	2,60	3,57	2,57	1,00
Create awareness of researchers for commercialization	4,6	3,00	1,60	4,71	2,57	2,14
Increase the use of knowledge created by the organization	4,6	3,00	1,60	4,00	2,86	1,14
Find collaborating partner	4,6	3,60	1,00	3,43	2,57	0,86
Transfer knowledge to industry/other organizations	4,6	3,60	1,00	4,14	3,57	0,57
Discover scientific breakthrough	4,4	1,20	3,20	3,86	3,29	0,57
Find (highly qualified) personnel	4	2,80	1,20	3,14	2,29	0,86
Profitability	3,2	1,40	1,80	1,86	2,00	-0,14
Improve industrial skills	3,2	1,80	1,40	1,71	0,43	1,29
Bring product(s) to the market	3,2	2,00	1,20	2,29	1,71	0,57
Improve business skills	3,2	2,80	0,40	4,29	2,29	2,00
Growth	2,6	2,00	0,60	1,57	1,29	0,29
Improve academic skills	2,6	3,00	-0,40	1,29	2,00	-0,71
Move to foreign country	1	1,00	0,00	0,71	0,14	0,57

Table 122 Barrier perception asymmetry between LSH and TTO's – causes of the inability to fulfill the goals of TTO's

Barriers	LSH for TTO		TTO's	
	mean	CO VAR	mean	CO VAR
<b>Problems that cause the inability to fulfill the goals</b>				
Lack of access to highly qualified employees	4,00	0,00	3,00	1,29
Lack of highly qualified employees	4,00	0,00	3,00	1,29
Not able to find the right collaboration partner	3,80	0,12	2,14	0,90
A lack of financial resources	3,60	0,15	3,86	0,90
Legislation problems	3,40	0,16	1,43	1,40
No flexibility in using foreground IP	3,40	0,16	0,71	0,49
Not enough cooperation partners	3,40	0,16	1,14	0,69
Too little knowledge about business opportunities	3,40	0,16	3,57	1,27
Not able to transfer knowledge to other organizations	3,20	0,26	1,57	0,98
Problems with licensing	3,20	0,26	1,43	1,27
Too little knowledge about research	3,20	0,26	1,29	0,76
Stacking of subsidies/grants	3,20	0,34	1,57	1,81
Lack of business skills	3,00	0,33	3,86	0,69
No access to progress of competitors	3,00	0,33	0,86	0,69
A lack of continuity of financial flows	2,80	0,30	3,86	1,35
Problems with patenting	2,80	0,30	0,86	0,38
Not the right technology	2,60	0,52	1,43	1,62
Not able to find service partner (legal, economic, marketing, etc)	2,40	0,23	1,43	0,53
A shortage of networking capabilities	1,60	0,34	2,14	1,07
No access to scientific papers	1,40	0,39	0,71	0,49

Table 123 Stimuli perception asymmetry between LSH and TTO's – potentially stimulating factors of TTO's

Stimuli	LSH for TTO		TTO's	
	mean	CO VAR	mean	CO VAR
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,20	0,11	4,00	0,46
Improved governmental legislation	4,00	0,25	2,29	0,97
Awareness of the organization by others	3,80	0,22	3,86	0,46
Financial support	3,60	0,25	4,43	0,12
Access to library	3,00	0,24	0,00	0,00
Industrial sector initiatives	3,00	0,24	3,71	0,46
Education and training	3,00	0,53	2,86	0,74
Improved supplier relationships	2,80	0,53	1,43	1,27

Table 124 Stimuli asymmetry between LSH and TTO's – positively experienced factors of TTO's

Stimuli	LSH for TTO		TTO's	
	mean	co var	mean	co var
<b>Factors with positive influence on the organization</b>				
Availability of partners to collaborate with	4,00	0,00	3,14	0,47
Awareness of the organization by others	3,60	0,15	3,14	0,47
Access to library	3,40	0,26	0,71	2,65
Education and training	3,20	0,41	2,43	0,52
Improved governmental legislation	3,00	0,53	1,43	0,37
Financial support	2,80	0,16	3,14	0,22
Improved supplier relationships	2,80	0,16	0,86	1,84
Industrial sector initiatives	2,80	0,16	3,57	0,22

Table 125 Differences in potentially stimulating factors and positively experienced factors between LSH and TTO's

Stimuli	LSH for TTO			TTO's		
	stimulating	experienced	Difference	stimulating	experienced	difference
<b>Factors with positive influence on the organization</b>						
Availability of partners to collaborate with	4,20	4,00	0,20	4,00	3,14	0,86
Improved governmental legislation	4,00	3,00	1,00	2,29	1,43	0,86
Awareness of the organization by others	3,80	3,60	0,20	3,86	3,14	0,71
Financial support	3,60	2,80	0,80	4,43	3,14	1,29
Industrial sector initiatives	3,00	2,80	0,20	3,71	3,57	0,14
Education and training	3,00	3,20	-0,20	2,86	2,43	0,43
Access to library	3,00	3,40	-0,40	0,00	0,71	-0,71
Improved supplier relationships	2,80	2,80	0,00	1,43	0,86	0,57

Table 126 Awareness perception asymmetry between LSH and TTO's

Awareness	LSH for TTO		TTO's	
	mean	co var	mean	co var
<b>agreement of the questions</b>				
Is the organization aware of the innovation program 'Life Sciences & Health'?	3,00	0,00	2,71	0,51
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,20	0,20	2,14	0,32
Is the organization aware of the services of LSH?	1,00	0,00	1,86	0,37
Is the organization aware of the possibilities for the organization to make use of the services?	1,00	0,00	1,86	0,37

Table 127 Service asymmetry between LSH and TTO's

Services	LSH for TTO		TTO's	
	mean	CO VAR	mean	CO VAR
<b>Services needed by stakeholders</b>				
Access to company database of the Netherlands	5,00	0,00	2,86	0,62
Information about venture capitalists	5,00	0,00	3,86	0,23
Information about companies in the Netherlands	4,60	0,12	4,29	0,11
Information about regulations and guidelines	4,60	0,12	3,86	0,28
Access to a database for product information	4,40	0,12	2,57	0,77
Access to a database to obtain information about progress concerning a certain target	4,40	0,12	3,14	0,65
Access to database to find venture capitalist	4,40	0,12	3,57	0,42
Facts and figures about the sector	4,40	0,12	4,29	0,11
Financial support from government	4,40	0,12	4,57	0,12
The possibility to find services that your organization needs	4,40	0,12	1,43	0,68
Access to a database for patent information	4,20	0,20	2,43	0,75
Information about subsidies	4,20	0,26	4,29	0,18
Information about education and trainings in the field of business skills	4,00	0,00	3,43	0,41
News items about the sector	4,00	0,00	4,00	0,25
Access to database to find collaborating partners	3,80	0,22	3,71	0,34
Information about regional initiatives of the Netherlands	3,40	0,16	2,71	0,63
Information about sharing facilities with other companies	3,40	0,16	2,71	0,59
A market place to find inventions to license	3,20	0,34	1,57	0,50
A market place to offer inventions for licensing	3,20	0,34	2,14	0,68
A market place where you can find qualified personnel	3,20	0,34	2,57	0,44
The possibility to offer your services to other organizations	3,20	0,34	1,86	0,48
Post calls for (funding) proposals	3,20	0,51	1,86	0,90
Access to database to find service organizations (legal, communication, etc)	3,00	0,33	1,43	0,37
Information about service providers (CRO's, CMO's, legal, finance, etc)	3,00	0,33	2,43	0,62
A market place to find partners in start of investigation to collaborate with	2,80	0,30	2,43	0,67
Access to database to find incubators	2,60	0,21	3,29	0,42
Information about education and trainings in the field of academic skills	2,40	0,23	2,00	0,71
Access to library to obtain scientific literature	2,20	0,59	1,57	0,72
A market place to find materials that you can use	2,00	0,71	1,71	0,44
A market place to find equipment that you can use	1,80	0,25	1,71	0,44
A market place to offer materials for other organizations	1,80	0,25	2,00	0,58
A market place to offer your equipment to other organizations	1,80	0,25	2,00	0,58
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,80	0,25	2,14	0,63
Support to move to foreign country	1,80	0,61	1,29	0,38
Support to open new location in the Netherlands	1,40	0,39	1,00	0,58

Table 128 Vision perception asymmetry between LSH and TTO's

Vision	LSH for TTO		TTO's	
	mean	co var	mean	co var
<b>Vision of stakeholders towards LSH</b>				
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,60	0,12	4,57	0,12
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,60	0,15	4,14	0,17
LSH provides comparable services as my organization	3,60	0,15	1,57	0,50
My company could benefit from LSH, but would survive without is as well	3,60	0,15	4,00	0,14
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,60	0,15	4,57	0,12
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,40	0,16	3,86	0,18
Do you think you will make use of the services of LSH in the future?	3,20	0,14	3,86	0,18
Is LSH useful for your organization?	3,20	0,14	3,29	0,15
Do you think that the objectives of LSH will bear fruit?	2,60	0,21	3,71	0,13
LSH provides comparable services as another organization that my company makes use of	2,60	0,21	3,43	0,41
Is LSH a threat to your organization?	2,60	0,58	1,43	0,55
LSH is a competitor of my company	2,60	0,58	1,57	0,50
I will make use of education and trainings provided by LSH	2,40	0,23	3,00	0,54
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	2,00	0,50	2,43	0,40

Table 129 Goals of different stakeholder groups

Goals	SME			RI			TTO		
	mean	rank	co var	mean	rank	co var	mean	rank	co var
<b>Goals for now</b>									
Funding	4,64	1	0,26	4,20	4	0,15	3,57	9	0,53
Networking	4,36	2	0,12	4,90	1	0,06	4,57	3	0,12
Find (highly qualified) personnel	3,91	3	0,18	2,00	10	0,88	3,14	11	0,47
Discover scientific breakthrough	3,36	4	0,36	1,80	11	1,01	3,86	8	0,46
Bring product(s) to the market	3,36	6	0,43	2,40	9	0,86	2,29	12	0,90
Growth	3,36	5	0,33	2,90	6	0,70	1,57	15	0,72
Patents	3,27	7	0,43	1,00	13	1,33	4,57	4	0,12
Licenses	3,18	8	0,56	0,60	17	1,41	4,71	2	0,10
Find collaborating partner	3,18	9	0,46	4,60	2	0,11	3,43	10	0,53
Transfer knowledge to industry/other organizations	3,00	10	0,33	4,40	3	0,16	4,14	6	0,45
Profitability	3,00	11	0,58	0,80	15	1,29	1,86	13	0,72
Increase the use of knowledge created by the organization	2,36	12	0,61	2,80	7	0,75	4,00	7	0,46
Create awareness of researchers for commercialization	2,27	13	0,56	3,90	5	0,41	4,71	1	0,10
Improve business skills	2,18	14	0,45	2,50	8	0,81	4,29	5	0,18
Improve industrial skills	2,18	15	0,67	0,70	16	1,36	1,71	14	0,99
Improve academic skills	1,73	16	0,37	1,20	12	1,17	1,29	16	0,74
Move to foreign country	1,45	17	0,64	1,00	14	1,56	0,71	17	0,68

Table 130 Achievement of the goals of different stakeholder groups

Barriers	SME			RI			TTO		
	mean	rank	CO VAR	mean	rank	CO VAR	mean	rank	CO VAR
<b>Achievements of the goals</b>									
Networking	4,45	1	0,12	3,60	1	0,30	3,29	4	0,55
Find collaborating partner	3,73	2	0,38	3,00	2	0,50	2,57	7	0,74
Find (highly qualified) personnel	3,27	3	0,48	1,60	7	0,94	2,29	11	0,60
Patents	2,73	4	0,68	0,80	11	2,02	3,86	1	0,46
Discover scientific breakthrough	2,18	5	0,84	0,30	14	2,25	3,29	5	0,46
Growth	2,09	6	0,89	2,60	4	0,71	1,29	15	1,72
Licenses	2,00	8	0,95	0,10	15	3,16	3,71	2	0,48
Funding	2,00	7	0,55	1,80	5	0,44	2,57	8	0,54
Bring product(s) to the market	1,82	9	1,04	0,80	12	1,15	1,71	14	0,87
Increase the use of knowledge created by the organization	1,64	10	1,10	1,60	8	1,07	2,86	6	0,71
Improve business skills	1,36	11	1,15	1,80	6	0,94	2,29	10	0,49
Transfer knowledge to industry/other organizations	1,27	12	1,22	2,80	3	0,33	3,57	3	0,27
Improve academic skills	1,18	13	1,41	1,00	10	1,70	2,00	12	1,26
Profitability	1,18	14	1,19	0,70	13	1,36	2,00	13	1,00
Create awareness of researchers for commercialization	1,00	15	1,41	1,50	9	0,72	2,57	9	0,21
Improve industrial skills	0,82	16	1,71	0,00	16	0,00	0,43	16	2,65
Move to foreign country	0,09	17	3,32	0,00	17	0,00	0,14	17	2,65

Table 131 Causes of the inability to fulfill the goals of different stakeholder groups

Barriers	SME			RI			TTO		
	mean	rank	CO VAR	mean	rank	CO VAR	mean	rank	CO VAR
<b>Problems that cause the inability to fulfill the goals</b>									
A lack of financial resources	3,82	1	0,33	2,00	5	0,97	3,86	3	0,90
A lack of continuity of financial flows	3,64	2	0,46	3,90	1	0,37	3,86	1	1,35
Legislation problems	2,64	3	0,62	1,70	7	1,15	1,43	11	1,40
Lack of highly qualified employees	2,55	4	0,57	1,50	9	1,01	3,00	6	1,29
Lack of access to highly qualified employees	2,27	5	0,63	1,70	8	1,15	3,00	5	1,29
Stacking of subsidies/grants	1,91	6	1,03	2,90	3	0,75	1,57	9	1,81
Lack of business skills	1,82	8	0,88	2,60	4	0,75	3,86	2	0,69
Too little knowledge about business opportunities	1,82	9	0,73	3,50	2	0,36	3,57	4	1,27
Not enough cooperation partners	1,82	7	0,59	0,50	19	1,05	1,14	16	0,69
Not able to find the right collaboration partner	1,73	12	0,69	1,10	14	1,39	2,14	8	0,90
No access to progress of competitors	1,73	11	0,78	0,60	18	1,17	0,86	18	0,69
Problems with licensing	1,64	13	0,74	0,90	16	1,43	1,43	13	1,27
Not able to transfer knowledge to other organizations	1,55	15	0,93	1,80	6	1,07	1,57	10	0,98
Problems with patenting	1,55	14	0,67	1,10	12	1,09	0,86	17	0,38
No flexibility in using foreground IP	1,45	16	1,21	1,20	11	1,29	0,71	19	0,49
A shortage of networking capabilities	1,36	17	0,59	1,50	10	1,14	2,14	7	1,07
Not able to find service partner (legal, economic, marketing, etc)	1,18	18	0,91	1,10	13	1,32	1,43	12	0,53
Too little knowledge about research	1,10	19	0,80	1,10	15	1,45	1,29	15	0,76
Not the right technology	1,09	20	0,76	0,40	20	1,29	1,43	14	1,62

Table 132 Factors with a potentially positive influence on the organization – different stakeholder groups

Stimuli Factors with positive influence on the organization	SME			RI			TTO		
	mean	rank	co var	mean	rank	co var	mean	rank	co var
Financial support	4,27	1	0,24	4,00	3	0,37	4,43	1	0,12
Availability of partners to collaborate with	4,18	2	0,34	4,50	2	0,12	4,00	2	0,46
Access to library	4,18	3	0,10	2,10	7	1,09	0,00	8	0,00
Industrial sector initiatives	3,00	5	0,61	2,90	5	0,70	3,71	4	0,46
Improved governmental legislation	3,00	4	0,63	3,10	4	0,70	2,29	6	0,97
Education and training	2,82	6	0,67	2,50	6	0,89	2,86	5	0,74
Improved supplier relationships	2,55	7	0,73	0,80	8	2,19	1,43	7	1,27
Awareness of the organization by others	2,09	8	1,01	4,70	1	0,10	3,86	3	0,46

Table 133 Positively experienced factors of different stakeholder groups

Stimuli Factors with positive influence on the organization	SME			RI			TTO		
	mean	rank	co var	mean	rank	co var	mean	rank	co var
Availability of partners to collaborate with	4,18	1	0,28	4,40	1	0,19	3,14	2	0,47
Access to library	3,82	2	0,23	1,30	6	1,66	0,71	8	2,65
Financial support	3,09	3	0,40	3,10	2	0,36	3,14	3	0,22
Education and training	2,27	4	0,81	1,70	5	1,11	2,43	5	0,52
Improved supplier relationships	2,09	5	0,78	0,80	8	2,19	0,86	7	1,84
Industrial sector initiatives	2,00	6	0,77	2,70	4	0,74	3,57	1	0,22
Awareness of the organization by others	1,91	7	1,03	3,10	3	0,56	3,14	4	0,47
Improved governmental legislation	1,64	8	1,00	1,30	7	1,09	1,43	6	0,37

Table 134 Awareness of different stakeholder groups the innovation program

Awareness agreement of the questions	SME			RI			TTO		
	mean	rank	co var	mean	rank	co var	mean	rank	co var
Is the organization aware of the innovation program 'Life Sciences & Health'?	2,64	1	0,39	3,30	1	0,29	2,71	1	0,51
Is the organization aware of the program bureau 'Life Sciences & Health' (LSH)?	2,18	2	0,45	2,90	2	0,34	2,14	2	0,32
Is the organization aware of the services of LSH?	2,27	3	0,56	2,50	3	0,34	1,86	3	0,37
Is the organization aware of the possibilities for the organization to make use of the services?	2,18	4	0,61	2,50	4	0,34	1,86	4	0,37

Table 135 Need for services by different stakeholder groups

Services  Services needed by stakeholders	SME			RI			TTO		
	mean	rank	co var	mean	rank	co var	mean	rank	co var
Financial support from government	3,82	1	0,40	4,00	2	0,37	4,57	1	0,12
Access to library to obtain scientific literature	3,82	2	0,37	1,60	25	1,22	1,57	30	0,72
Information about subsidies	3,45	3	0,47	3,80	5	0,39	4,29	4	0,18
Facts and figures about the sector	3,00	5	0,52	4,00	4	0,37	4,29	3	0,11
News items about the sector	3,00	4	0,54	4,00	3	0,37	4,00	5	0,25
Information about regulations and guidelines	3,00	6	0,52	2,20	13	1,00	3,86	7	0,28
Access to a database to obtain information about progress concerning a certain target (competitive intelligence)	3,00	7	0,60	1,50	27	1,31	3,14	12	0,65
A market place where you can find qualified personnel	2,91	8	0,62	2,30	11	0,94	2,57	16	0,44
Information about companies in the Netherlands	2,73	9	0,59	4,30	1	0,16	4,29	2	0,11
Information about sharing facilities with other companies	2,73	10	0,68	2,40	10	0,93	2,71	15	0,59
A market place to find equipment that you can use	2,73	11	0,66	1,80	21	1,14	1,71	28	0,44
Access to a database for patent information	2,64	14	0,73	0,90	34	1,61	2,43	20	0,75
Post calls for (funding) proposals	2,64	13	0,80	1,60	26	1,32	1,86	27	0,90
The possibility to find services that your organization needs	2,64	12	0,62	1,90	18	1,12	1,43	32	0,68
Access to company database of the Netherlands	2,55	16	0,69	3,10	6	0,65	2,86	13	0,62
A market place to find inventions to license	2,55	15	0,71	1,40	30	1,27	1,57	31	0,50
Access to database to find collaborating partners	2,45	17	0,69	2,70	8	0,80	3,71	8	0,34
Information about venture capitalists	2,36	18	0,85	2,70	9	0,87	3,86	6	0,23
The possibility to offer your services to other organizations	2,27	19	0,63	2,10	15	1,06	1,86	26	0,48
A market place to find partners in start of investigation to collaborate	2,09	21	0,84	2,20	14	0,93	2,43	18	0,67
A market place to offer your equipment to other organizations	2,09	20	0,72	1,80	22	1,14	2,00	24	0,58
Access to database to find venture capitalist	2,00	28	0,89	2,10	16	1,04	3,57	9	0,42
Information about education and trainings in the field of business skills	2,00	22	0,92	1,70	24	1,21	3,43	10	0,41
Access to a database for product information	2,00	26	0,84	1,30	31	1,31	2,57	17	0,77
Information about service providers (CRO's, CMO's, legal, finance, etc)	2,00	23	0,92	1,90	19	1,09	2,43	19	0,62
A market place to offer inventions for licensing	2,00	25	0,87	2,00	17	1,03	2,14	21	0,68
A market place to find materials that you can use	2,00	24	0,92	1,80	23	1,14	1,71	29	0,44
Access to database to find service organizations (legal, communication,	2,00	27	0,87	0,80	35	1,54	1,43	33	0,37
Information about regional initiatives of the Netherlands	1,73	29	0,86	3,00	7	0,70	2,71	14	0,63
A market place to offer materials for other organizations	1,73	31	0,94	2,30	12	0,94	2,00	23	0,58
Information about education and trainings in the field of academic skills	1,73	30	0,90	1,30	32	1,31	2,00	25	0,71
Access to database to find incubators	1,64	32	0,83	1,50	28	1,23	3,29	11	0,42
Support to open new location in the Netherlands	1,55	33	1,02	1,10	33	1,32	1,00	35	0,58
The possibility to advertise your company (e.g. on website, newsletter, etc)	1,45	34	0,89	1,90	20	1,09	2,14	22	0,63
Support to move to foreign country	1,18	35	0,99	1,44	29	1,30	1,29	34	0,38

Table 136 Vision of LSH held by different stakeholder groups

Vision	SME			RI			TTO		
	mean	rank	CO VAR	mean	rank	CO VAR	mean	rank	CO VAR
My company could benefit from LSH, but would survive without it as well	4,18	1	0,14	3,70	5	0,31	4,00	4	0,14
Do you think you will make use of the services of LSH in the future?	4,00	2	0,00	3,90	1	0,19	3,86	5	0,18
Presenting the Dutch life sciences and health sector as a unity would bear fruit for the Netherlands	4,00	3	0,34	3,80	4	0,37	4,57	1	0,12
I trust the intentions of LSH to improve the innovation processes of the stakeholders	3,82	4	0,11	3,60	6	0,37	3,86	6	0,18
I trust the intentions of LSH to give the life sciences and health sector an impulse	3,82	5	0,11	3,40	9	0,28	4,14	3	0,17
Is LSH useful for your organization?	3,73	6	0,13	3,80	3	0,24	3,29	9	0,15
Do you think that the objectives of LSH will bear fruit?	3,64	7	0,14	3,60	7	0,23	3,71	7	0,13
Presenting the Dutch life sciences and health sector as a unity would bear fruit for my company	3,36	8	0,38	3,60	8	0,40	4,57	2	0,12
LSH provides comparable services as another organization that my company makes use of	2,73	9	0,44	2,30	12	0,65	3,43	8	0,41
I will make use of education and trainings provided by LSH	2,18	10	0,45	2,60	11	0,41	3,00	10	0,54
Do you think LSH puts its own interests before the interests of the stakeholders' interests?	1,64	11	0,83	3,10	10	0,18	2,43	11	0,40
Is LSH a threat to your organization?	1,09	12	0,28	2,20	13	0,56	1,43	15	0,55
LSH provides comparable services as my organization	1,00	13	0,00	3,80	2	0,21	1,57	12	0,50
LSH is a competitor of my company	1,00	15	0,00	2,00	14	0,53	1,57	14	0,50

Table 137 Comparison of achievements of goals among stakeholders

Goals	SME					RI's					TTO				
	Goals for now	Achievement of the goals				Goals for now	Achievement of goals				Goals for now	Achievement of goals			
indicator	mean	CO VAR	mean	CO VAR	difference	mean	CO VAR	mean	CO VAR	difference	mean	CO VAR	mean	CO VAR	difference
Funding	4,64	0,26	2,00	0,55	2,64	4,20	0,15	1,80	0,44	2,40	3,57	0,53	2,57	0,54	1,00
Networking	4,36	0,12	4,45	0,12	-0,09	4,90	0,06	3,60	0,30	1,30	4,57	0,12	3,29	0,55	1,29
Find (highly qualified) personnel	3,91	0,18	3,27	0,48	0,64	2,00	0,88	1,60	0,94	0,40	3,14	0,47	2,29	0,60	0,86
Bring product(s) to the market	3,36	0,43	1,82	1,04	1,55	2,40	0,86	0,80	1,15	1,60	2,29	0,90	1,71	0,87	0,57
Discover scientific breakthrough	3,36	0,36	2,18	0,84	1,18	1,80	1,01	0,30	2,25	1,50	3,86	0,46	3,29	0,46	0,57
Growth	3,36	0,33	2,09	0,89	1,27	2,90	0,70	2,60	0,71	0,30	1,57	0,72	1,29	1,72	0,29
Patents	3,27	0,43	2,73	0,68	0,55	1,00	1,33	0,80	2,02	0,20	4,57	0,12	3,86	0,46	0,71
Find collaborating partner	3,18	0,46	3,73	0,38	-0,55	4,60	0,11	3,00	0,50	1,60	3,43	0,53	2,57	0,74	0,86
Licenses	3,18	0,56	2,00	0,95	1,18	0,60	1,41	0,10	3,16	0,50	4,71	0,10	3,71	0,48	1,00
Profitability	3,00	0,58	1,18	1,19	1,82	0,80	1,29	0,70	1,36	0,10	1,86	0,72	2,00	1,00	-0,14
Transfer knowledge to industry/other organizations	3,00	0,33	1,27	1,22	1,73	4,40	0,16	2,80	0,33	1,60	4,14	0,45	3,57	0,27	0,57
Increase the use of knowledge created by the organization	2,36	0,61	1,64	1,10	0,73	2,80	0,75	1,60	1,07	1,20	4,00	0,46	2,86	0,71	1,14
Create awareness of researchers for commercialization	2,27	0,56	1,00	1,41	1,27	3,90	0,41	1,50	0,72	2,40	4,71	0,10	2,57	0,21	2,14
Improve business skills	2,18	0,45	1,36	1,15	0,82	2,50	0,81	1,80	0,94	0,70	4,29	0,18	2,29	0,49	2,00
Improve industrial skills	2,18	0,67	0,82	1,71	1,36	0,70	1,36	0,00	0,00	0,70	1,71	0,99	0,43	2,65	1,29
Improve academic skills	1,73	0,37	1,18	1,41	0,55	1,20	1,17	1,00	1,70	0,20	1,29	0,74	2,00	1,26	-0,71
Move to foreign country	1,45	0,64	0,09	3,32	1,36	1,00	1,56	0,00	0,00	1,00	0,71	0,68	0,14	2,65	0,57

Table 138 Comparison between potentially stimulating factors and positively experienced factors of mutual stakeholders

Stimuli	SME					RI					TTO				
	Factors with positive influence on the organization		Experienced factors			Factors with positive influence on the organization		Experienced factors			Factors with positive influence on the organization		Experienced factors		
	mean	CO VAR	mean	CO VAR	difference	mean	CO VAR	mean	CO VAR	difference	mean	CO VAR	mean	CO VAR	Difference
Indicator SME															
Financial support	4,27	0,24	3,09	0,40	1,18	4,00	0,37	3,10	0,36	0,90	4,43	0,12	3,14	0,22	1,29
Access to library	4,18	0,10	3,82	0,23	0,36	2,10	1,09	1,30	1,66	0,80	0,00	0,00	0,71	2,65	-0,71
Availability of partners to collaborate with	4,18	0,34	4,18	0,28	0,00	4,50	0,12	4,40	0,19	0,10	4,00	0,46	3,14	0,47	0,86
Improved governmental legislation	3,00	0,63	1,64	1,00	1,36	3,10	0,70	1,30	1,09	1,80	2,29	0,97	1,43	0,37	0,86
Industrial sector initiatives	3,00	0,61	2,00	0,77	1,00	2,90	0,70	2,70	0,74	0,20	3,71	0,46	3,57	0,22	0,14
Education and training	2,82	0,67	2,27	0,81	0,55	2,50	0,89	1,70	1,11	0,80	2,86	0,74	2,43	0,52	0,43
Improved supplier relationships	2,55	0,73	2,09	0,78	0,45	0,80	2,19	0,80	2,19	0,00	1,43	1,27	0,86	1,84	0,57
Awareness of the organization by others	2,09	1,01	1,91	1,03	0,18	4,70	0,10	3,10	0,56	1,60	3,86	0,46	3,14	0,47	0,71

## APPENDIX II    GRAPHS

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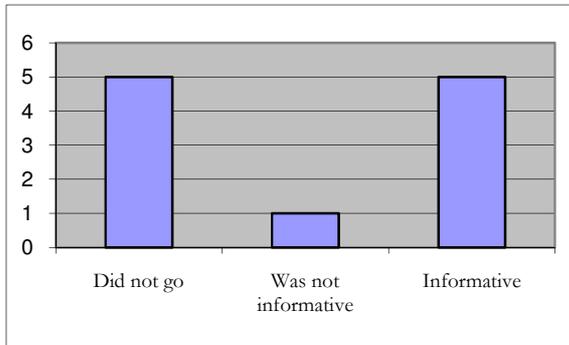


Figure 6 Appearance of SME's at Nyenrode Event

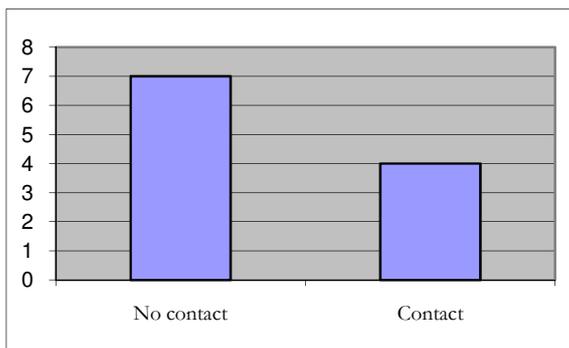


Figure 7 Number of SME's that had contact with LSH in the past

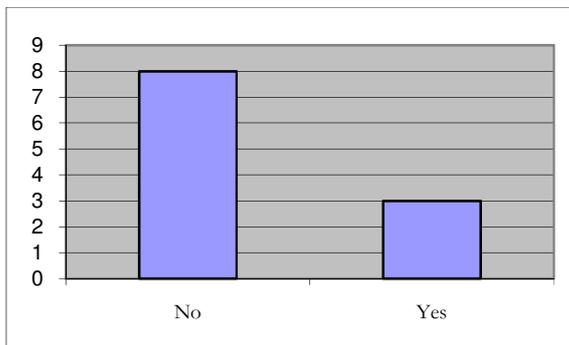


Figure 8 Number of SME's that have visited the website

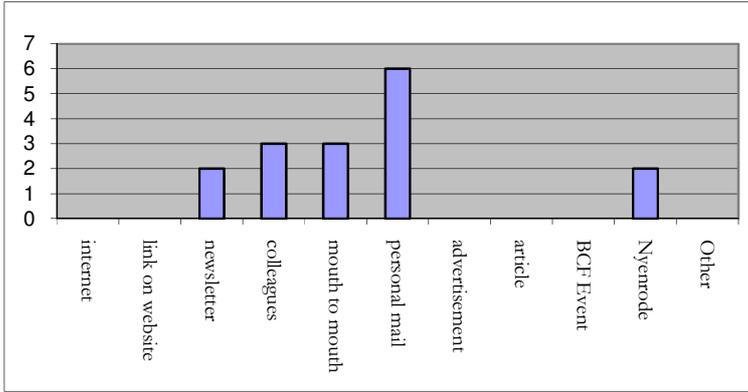


Figure 9 The way in which SME's are brought in contact with LSH

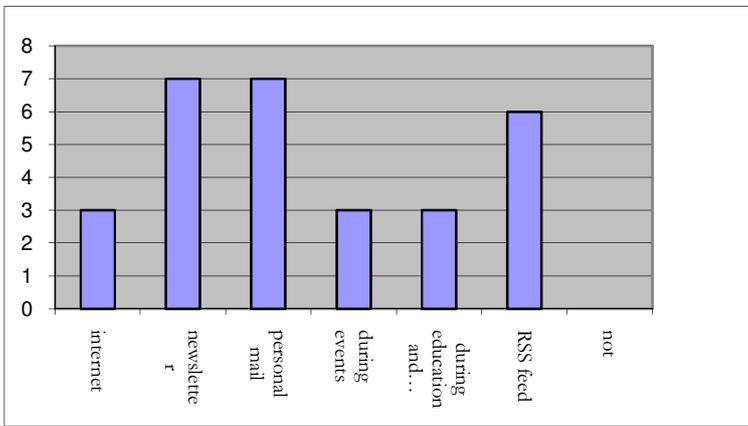


Figure 10 Preferred way to stay in touch with LSH by SME's

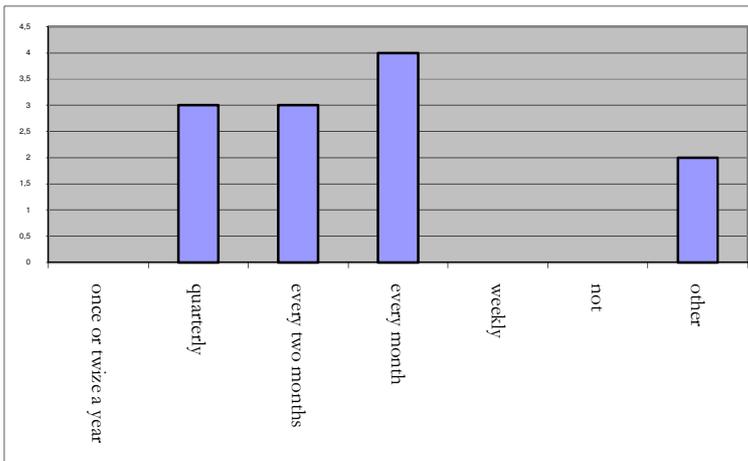


Figure 11 Preferred frequency to stay in touch with LSH by SME's

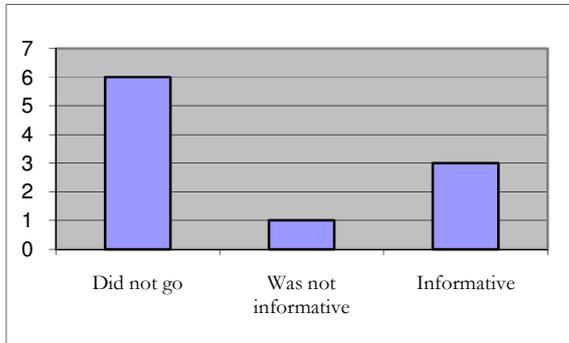


Figure 12 Appearance of regional initiatives at the Nyenrode Life Sciences & Healthcare Event

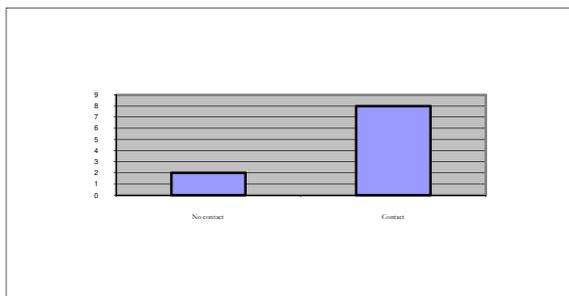


Figure 13 Number of initiatives that had contact with LSH in the past

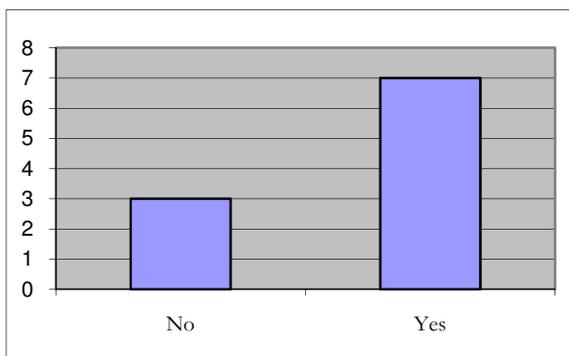


Figure 14 Number of regional initiatives that have visited the website

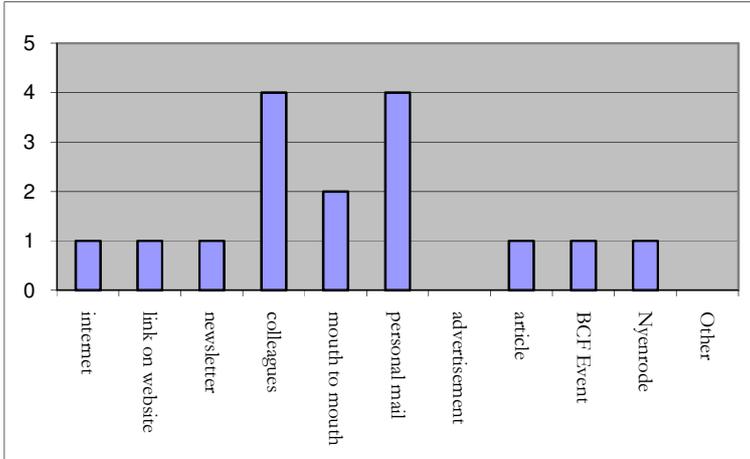


Figure 15 The way in which regional initiatives are brought in contact with LSH

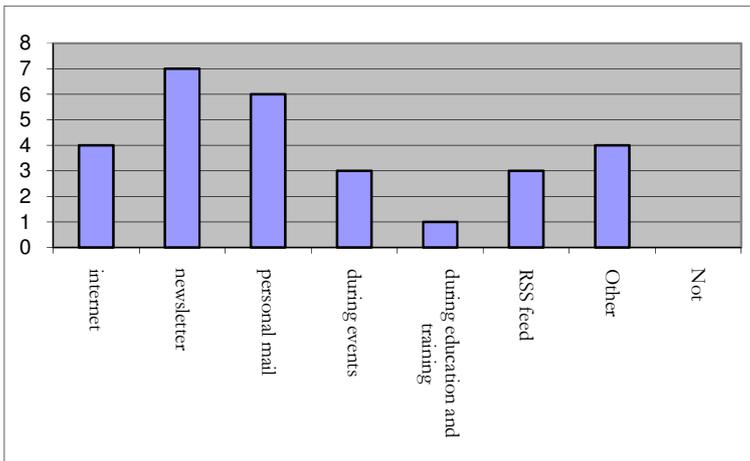


Figure 16 Preferred way of regional initiatives to stay in contact with LSH

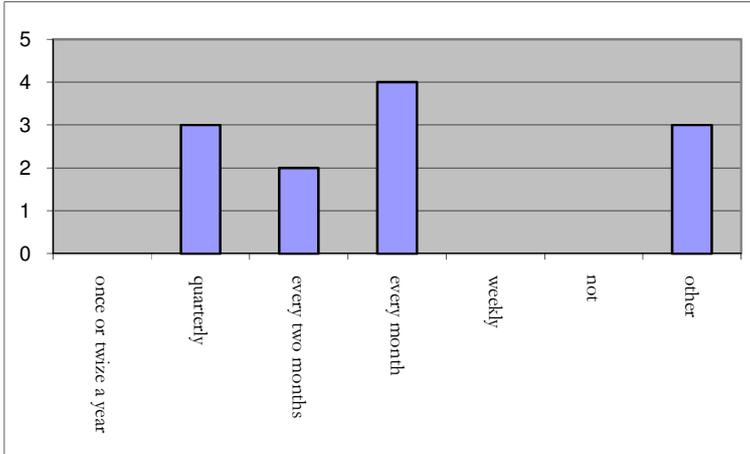


Figure 17 Preferred frequency of regional initiatives to stay in touch with LSH

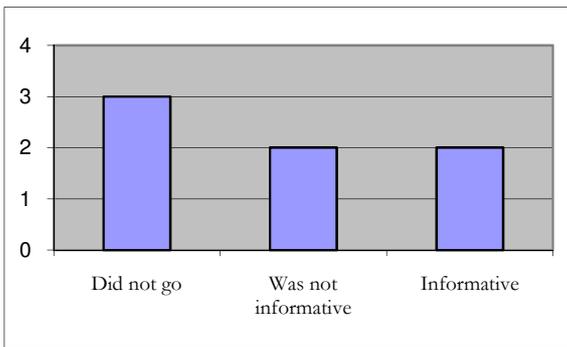


Figure 18 Appearance of TTO's at the Nyenrode Life Sciences & Healthcare Event

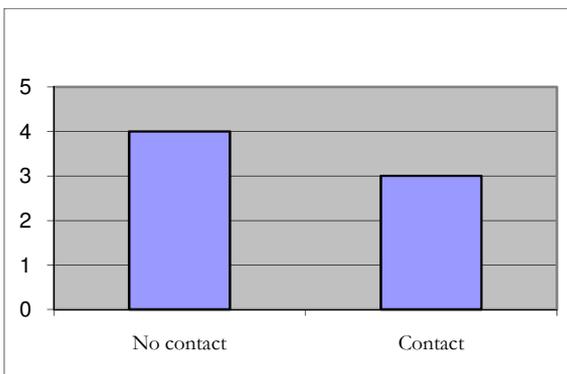


Figure 19 Number of TTO's that had contact with LSH in the past

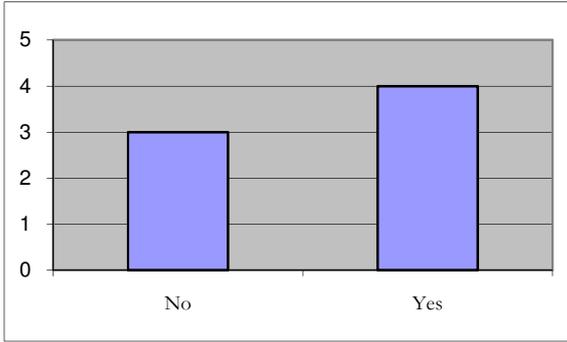


Figure 20 Number of TTO's that have visited the website

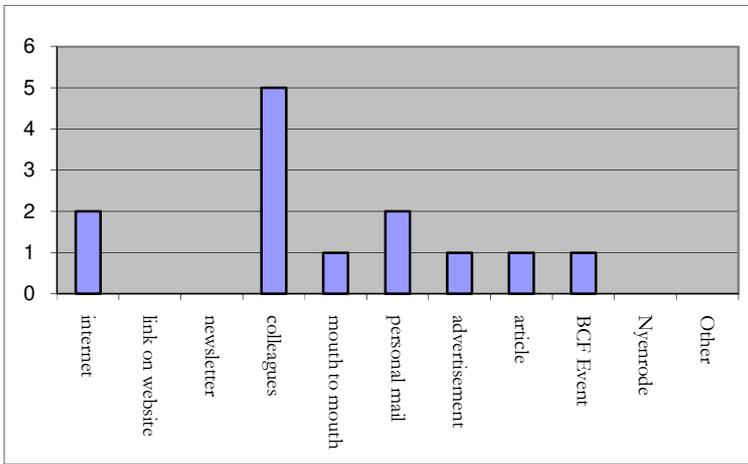


Figure 21 The way in which TTO's are brought in contact with LSH

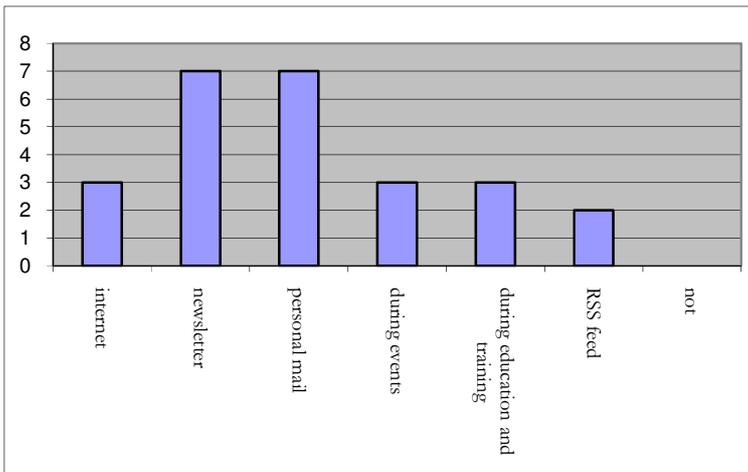


Figure 22 Preferred way of TTO's to stay in touch with LSH

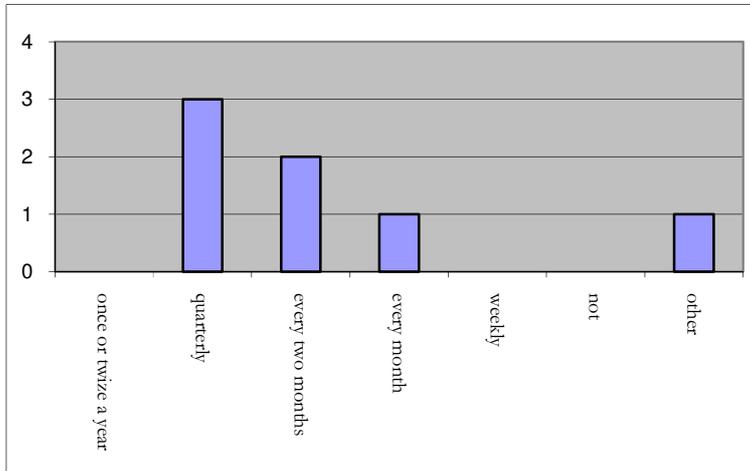


Figure 23 Preferred frequency of TTO's to stay in touch with LSH

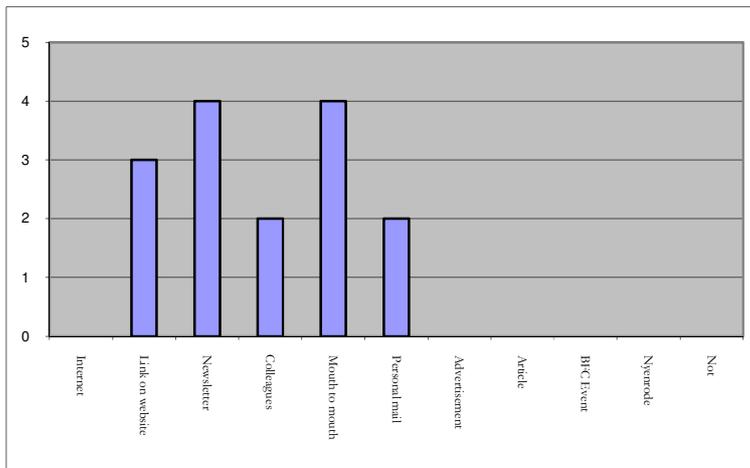


Figure 24 Expectations of LSH in which SME's are brought in contact with LSH

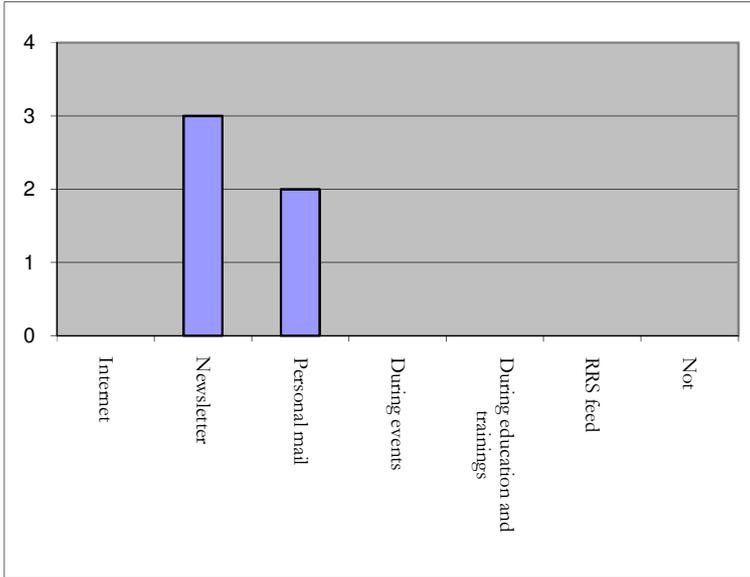


Figure 25 Way in which LSH thinks that SME's want to stay in touch

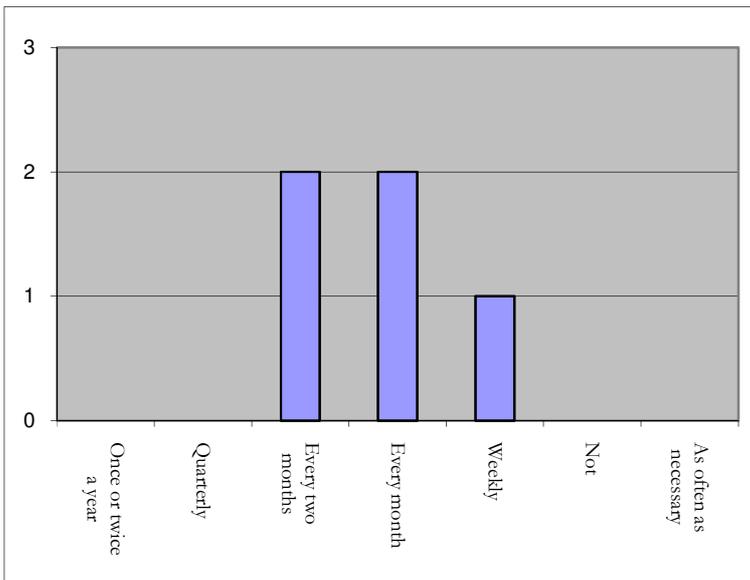


Figure 26 Expectation of LSH on the preferred frequency of SME's to stay in touch with LSH

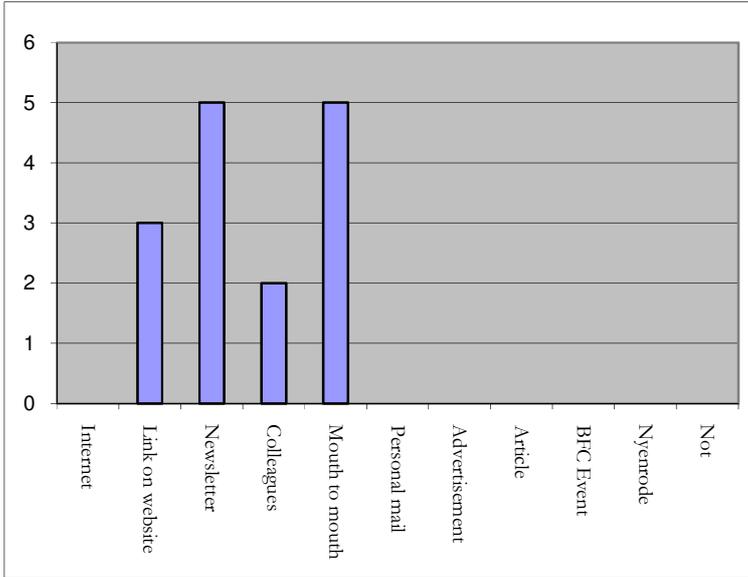


Figure 27 Expectations of LSH in which RI's are brought in contact with LSH

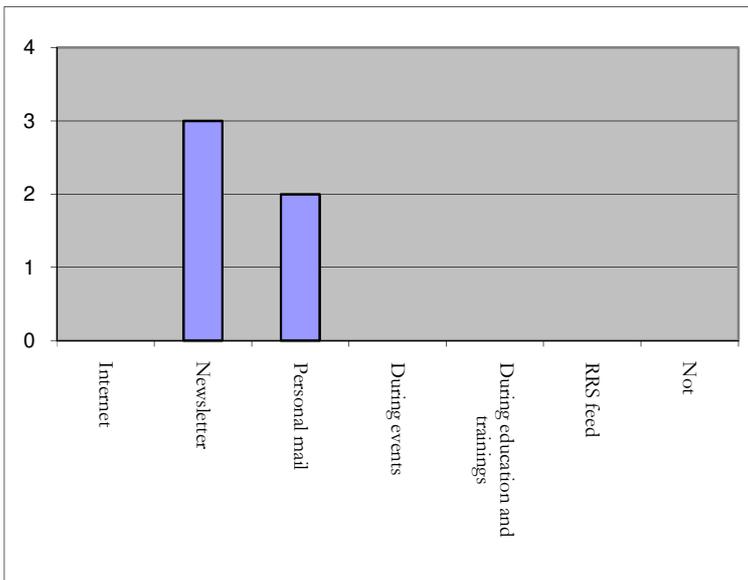


Figure 28 Way in which LSH thinks that RI's want to stay in touch

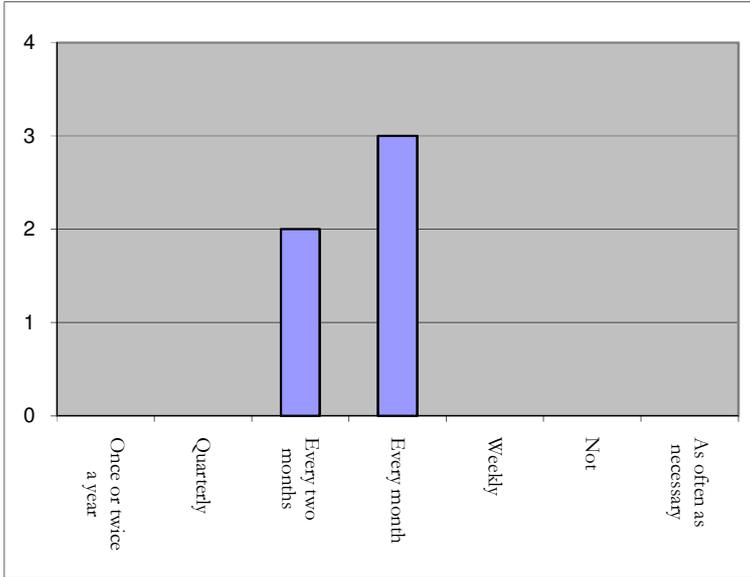


Figure 29 Expectation of LSH on the preferred frequency of RI's to stay in touch with LSH

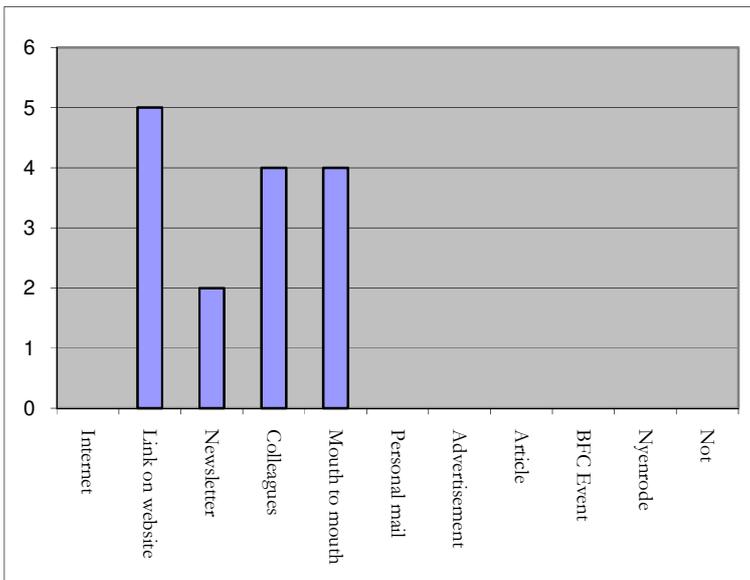


Figure 30 Expectations of LSH in which TTO's are brought in contact with LSH

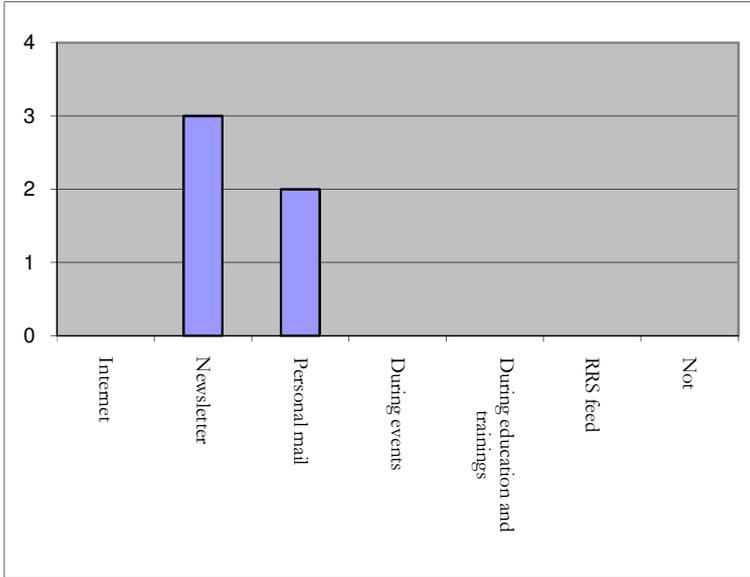


Figure 31 Way in which LSH thinks that TTO's want to stay in touch

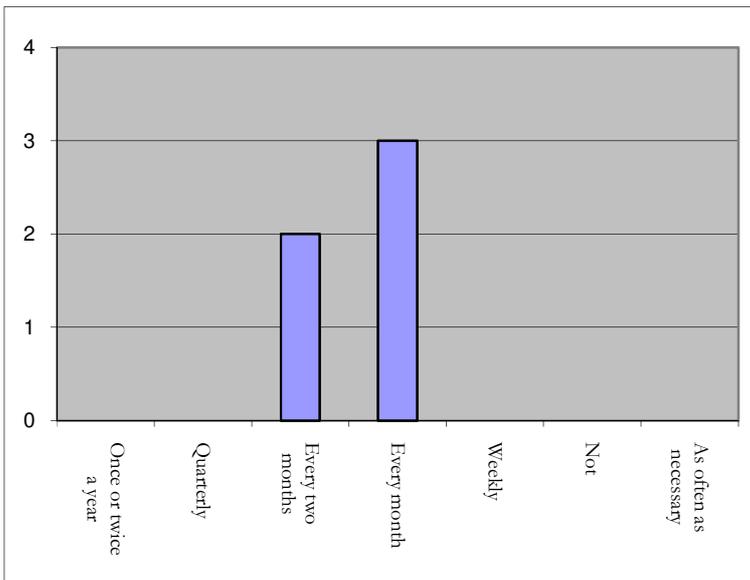


Figure 32 Expectation of LSH on the preferred frequency of TTO's to stay in touch with LSH

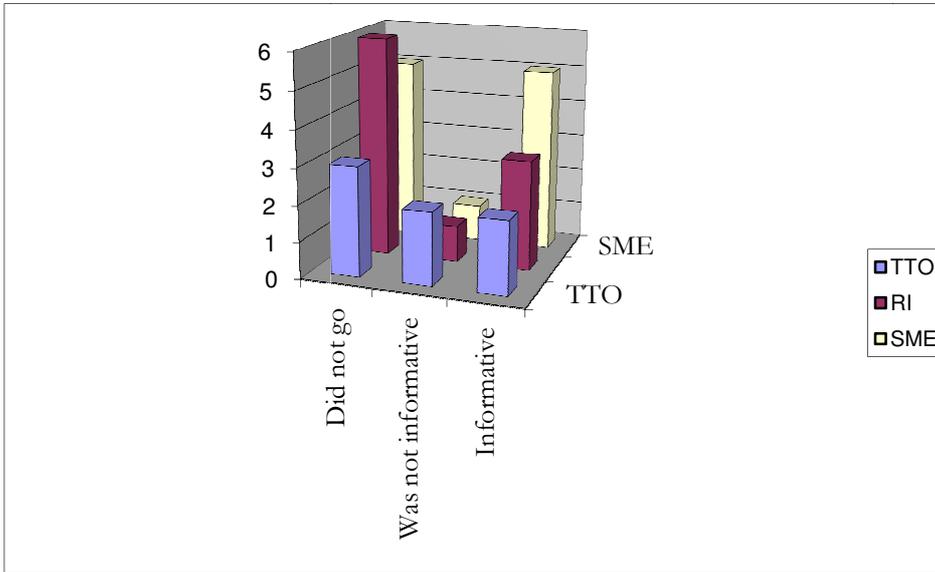


Figure 33 Number of stakeholders that went to the Nyenrode Event

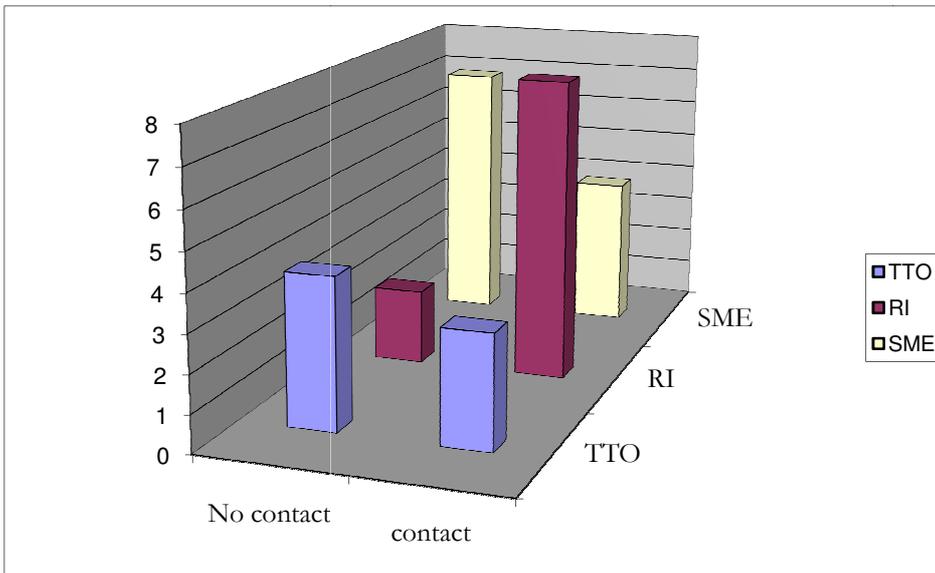


Figure 34 Number of stakeholders that had contact with LSH in the past

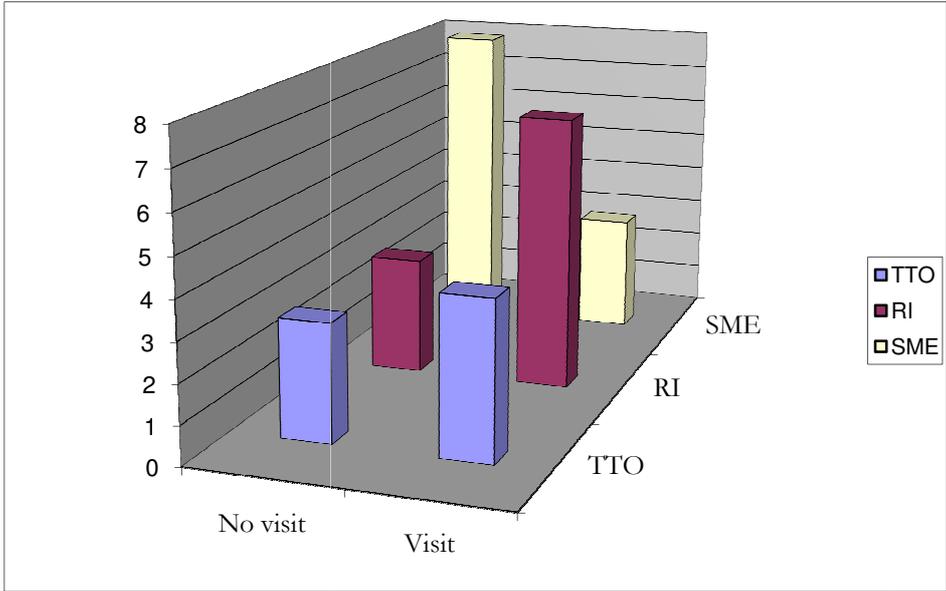


Figure 35 Number of stakeholders that have visited the website of LSH

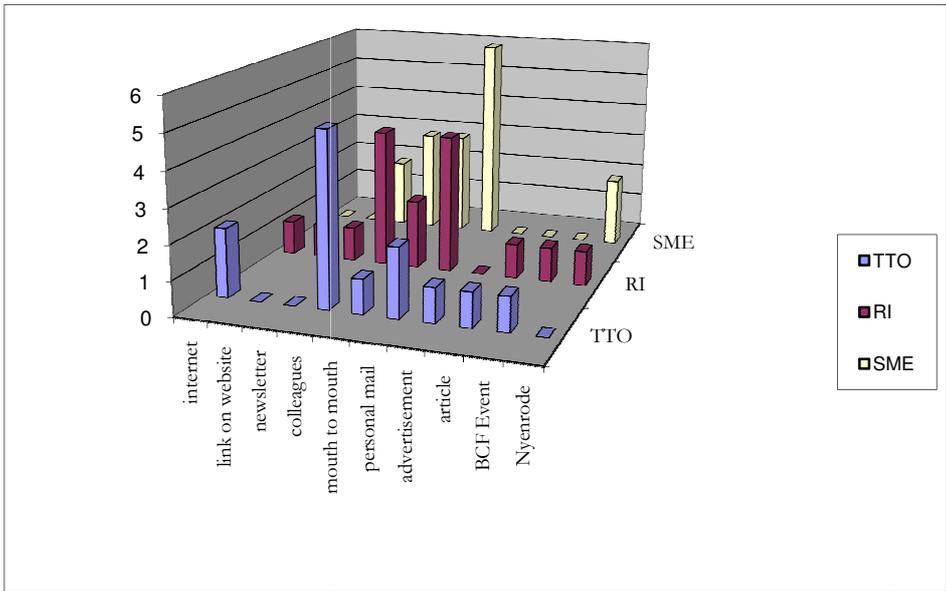


Figure 36 Way in which stakeholders were brought in contact with LSH

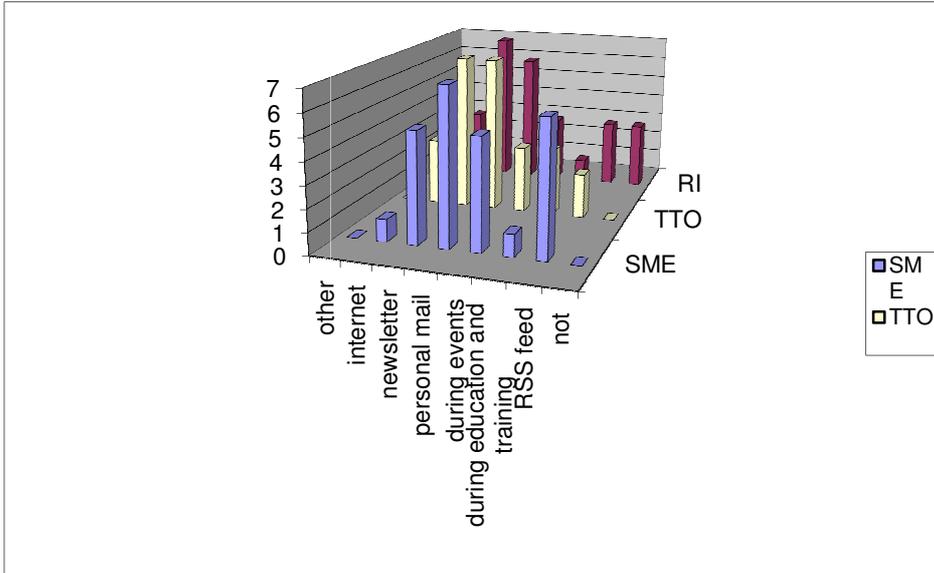


Figure 37 Preferred way to stay in touch with LSH

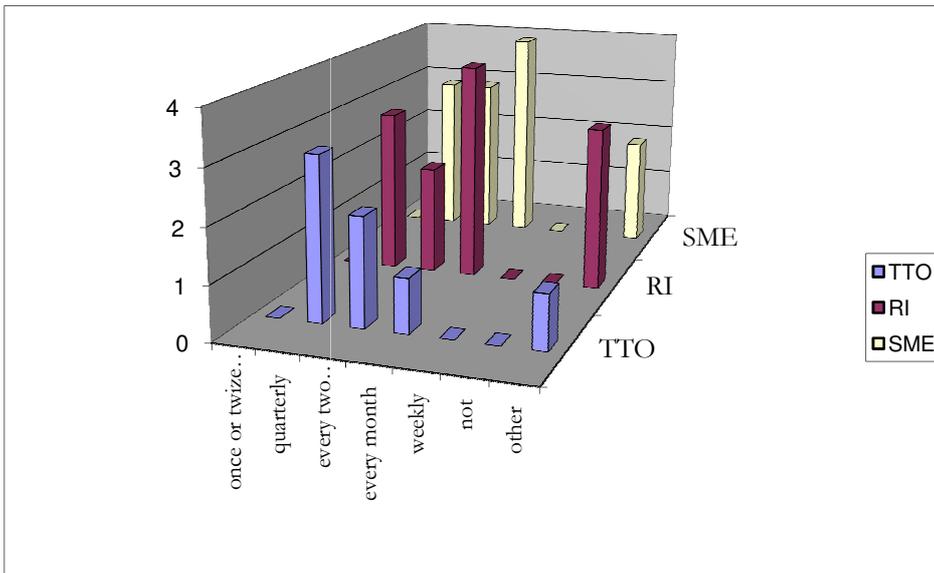


Figure 38 Preferred frequency to stay in touch with LSH

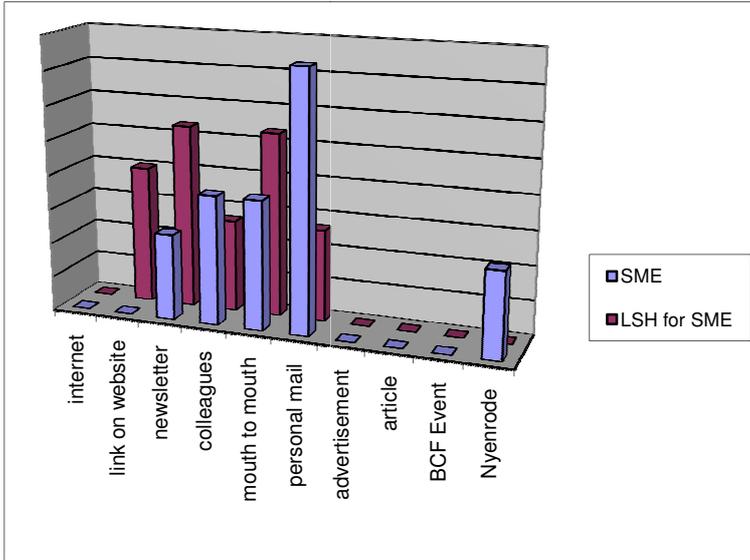


Figure 39 Awareness perception asymmetry I – LSH-SME – Way in which stakeholder is brought in contact with LSH

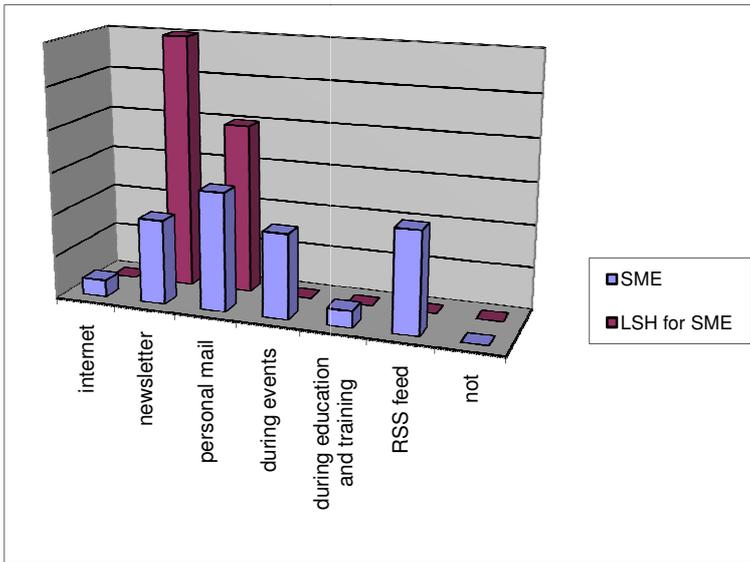


Figure 40 Awareness perception asymmetry II – LSH-SME- Preferred frequency to stay in touch

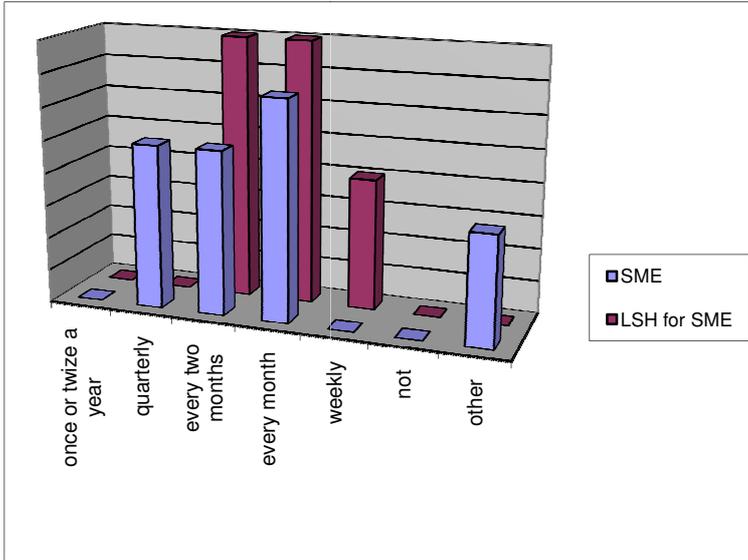


Figure 41 Awareness perception asymmetry III- LSH –SME – Preferred frequency to stay in touch

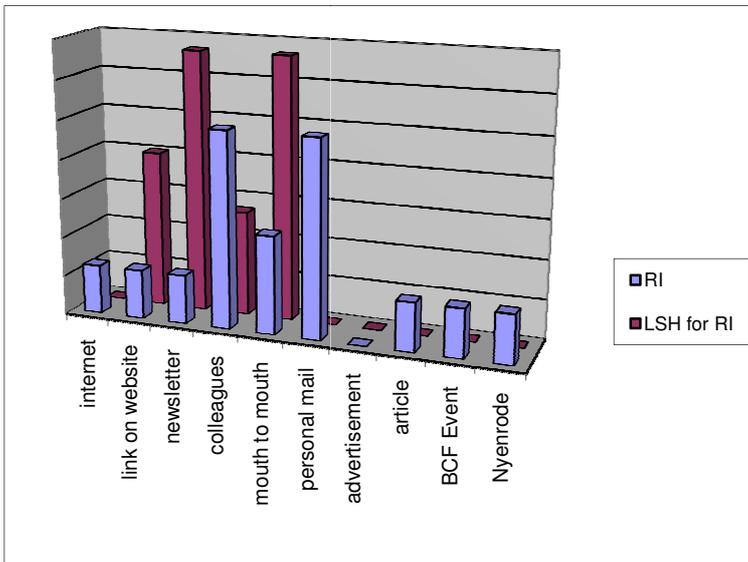


Figure 42 Awareness perception asymmetry I – LSH-RI – Way in which stakeholder is brought in contact with LSH

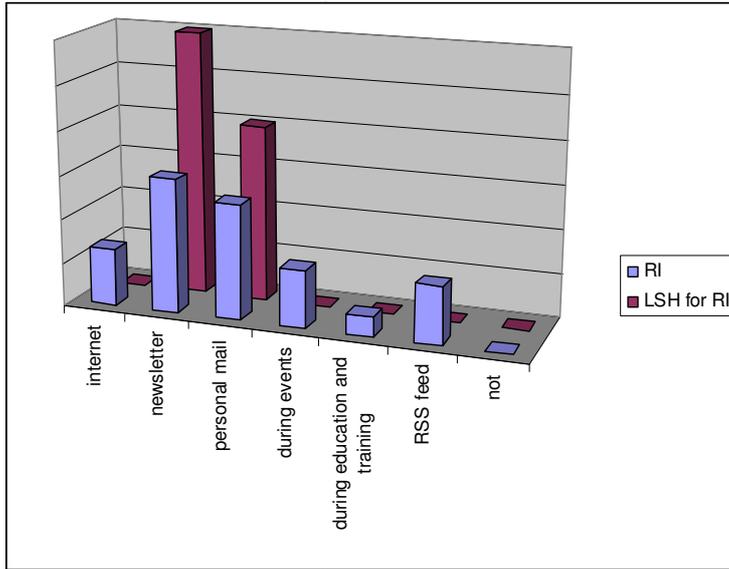


Figure 43 Awareness perception asymmetry II – LSH-RI- Preferred frequency to stay in touch

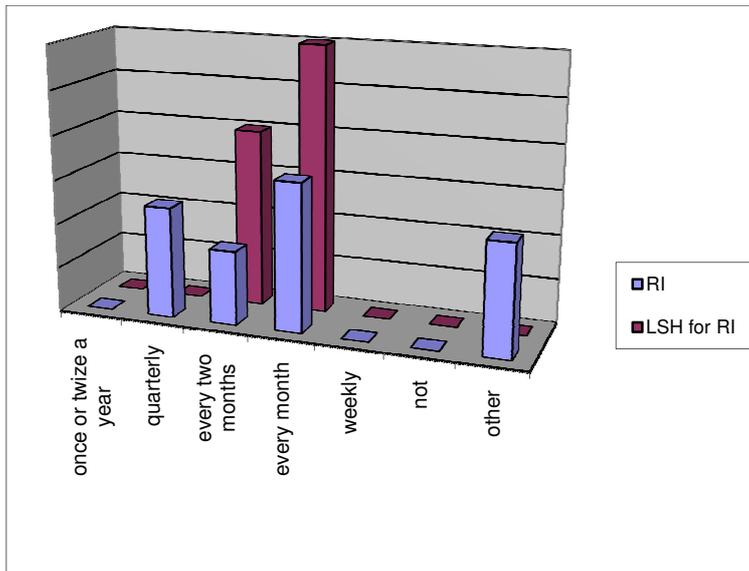


Figure 44 Awareness perception asymmetry III- LSH –RI – Preferred frequency to stay in touch

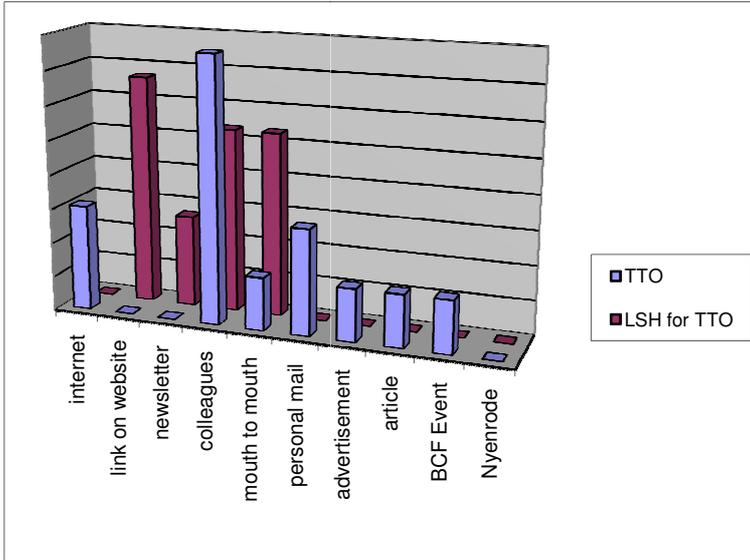


Figure 45 Awareness perception asymmetry I – LSH-TTO – Way in which stakeholder is brought in contact with LSH

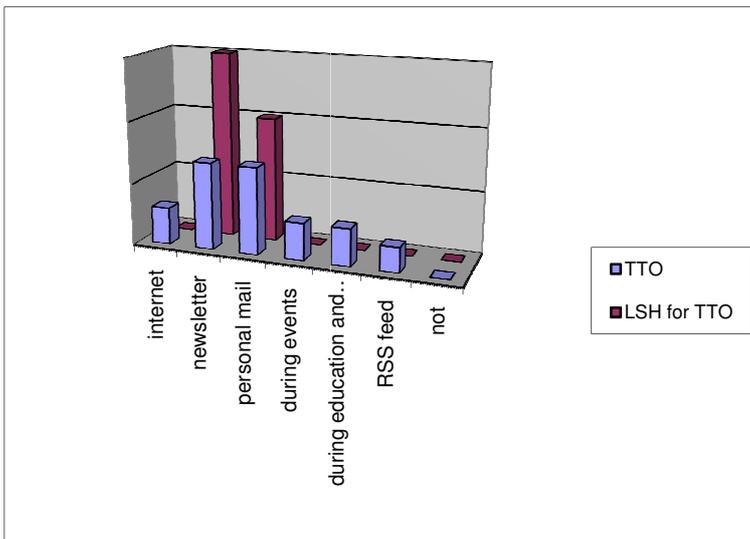


Figure 46 Awareness perception asymmetry II – LSH-TTO- Preferred frequency to stay in touch

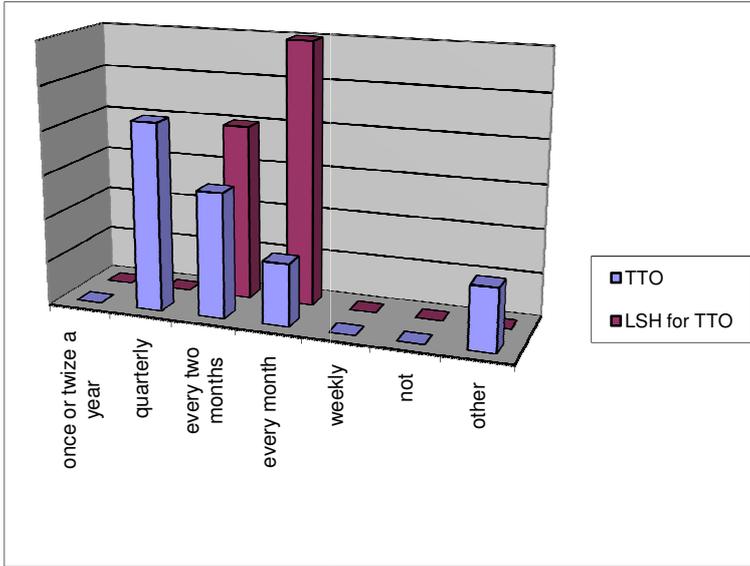


Figure 47 Awareness perception asymmetry III- LSH –TTO – Preferred frequency to stay in touch