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"Collaborative strategy and institutional interference to stimulate innovation in regional economic development"

-A case study of Baubau, Sulawesi-

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Abstract

In this research the objective was to find out how collaboration affects the stimulation of innovation in a developing region in Indonesia. In Western civilized countries collaboration can take place in several distinguished forms and with different intensity level or formalization. However, what is the role of collaboration in a developing region and how does it strategically interact with its environment? What is the role of institutions in this respect? How do governmental institutions and other authorities affect the development of collaborations? Since institutions are quite important in developing regions the institutional interference can be considered as high and, therefore, had to be investigated in this research. Interviews were conducted to gather qualitative data for this research. Furthermore, during the fieldtrips and the interviews observation were made to understand the context that is applicable for the interviews.

Formalized and not formalized forms of collaboration are distinguished in this research to categorize whether the institutions have an active role in initializing the cooperative. This is vital since the cooperative that are initiated by the government attract different people than the cooperatives that are initiated by cultivators. The formalized collaborations have a different perspective on innovation and innovation management than the informal collaborations as well.

Furthermore, this research shows that governmental and institutional interference can affect the innovation basis that exists in the developing region. There has to be made a distinction among top-down innovation management policies that are initiated and controlled by the national institutions and by bottom-up innovation management policies that support and stimulate innovation based on regional conditions and circumstances.

Acknowledgements

During this research I have received the support and help from many people. I would like to thank these people that supported my investigation that made this research to a success. However, first of all I would like to dedicate this research to all the people in Baubau and Pinrang. I sincerely hope that the local economic development of this regions will increase and will bring them health and prosperity.

A special thanks to my supervisors and the professors, lecturers and students of Institut Teknologi Bandung for their infinite support, hospitality, and help. Also thanks to the interpreters in Baubau, Kaledupa, Pinrang and Makassar for their friendship, hospitality and all the effort they put into my investigation. Finally, I would like to thank all the interviewees for their hospitality and time they were willing to invest.

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Introduction

Academic literature on Strategic Management is mainly focused on organizations and institutions operating in the Western world. This part of the world is characterized by countries that have a more or less stable economic growth and a stable governmental structure. On the other hand, little literature is written about organisations that are functioning in underdeveloped countries. Moreover, the available literature is more focused on strategic relations between local and international organizations. Nonetheless, the literature on strategic decision making, strategic cooperation and collaborative strategies in developing regions is scarce.

This research focuses on regional economic development in the region of Baubau, South East Sulawesi, in Indonesia. The most important industries in this area are fishery and seaweed cultivation. The majority of the inhabitants of this region depend on these industries and are, in most cases, working in one of these industries. The model of Stimson et al. (2009) shows that several influencing factors, directly or indirectly influence the outcome (see figure 1) of the model. These factors are: resources and market conditions, entrepreneurship, leadership, and institutions. The dependent variable in this model is the 'region that is competitive entrepreneurial sustainable'.

According to Stimson et al. (2009) the development processes in the rural area originates throughout the activities of the individuals in the community and the institutions that interfere in the region. The objective of the economic development is, according to their research, achieving a sustainable growth. This growth can be economically but also socially. Furthermore, Stimson et al. (2009) state that an appropriate way to enable this process has to be by a proactive strategic approach to develop instead of a reactive strategy that focuses on adapting to a changing environment.

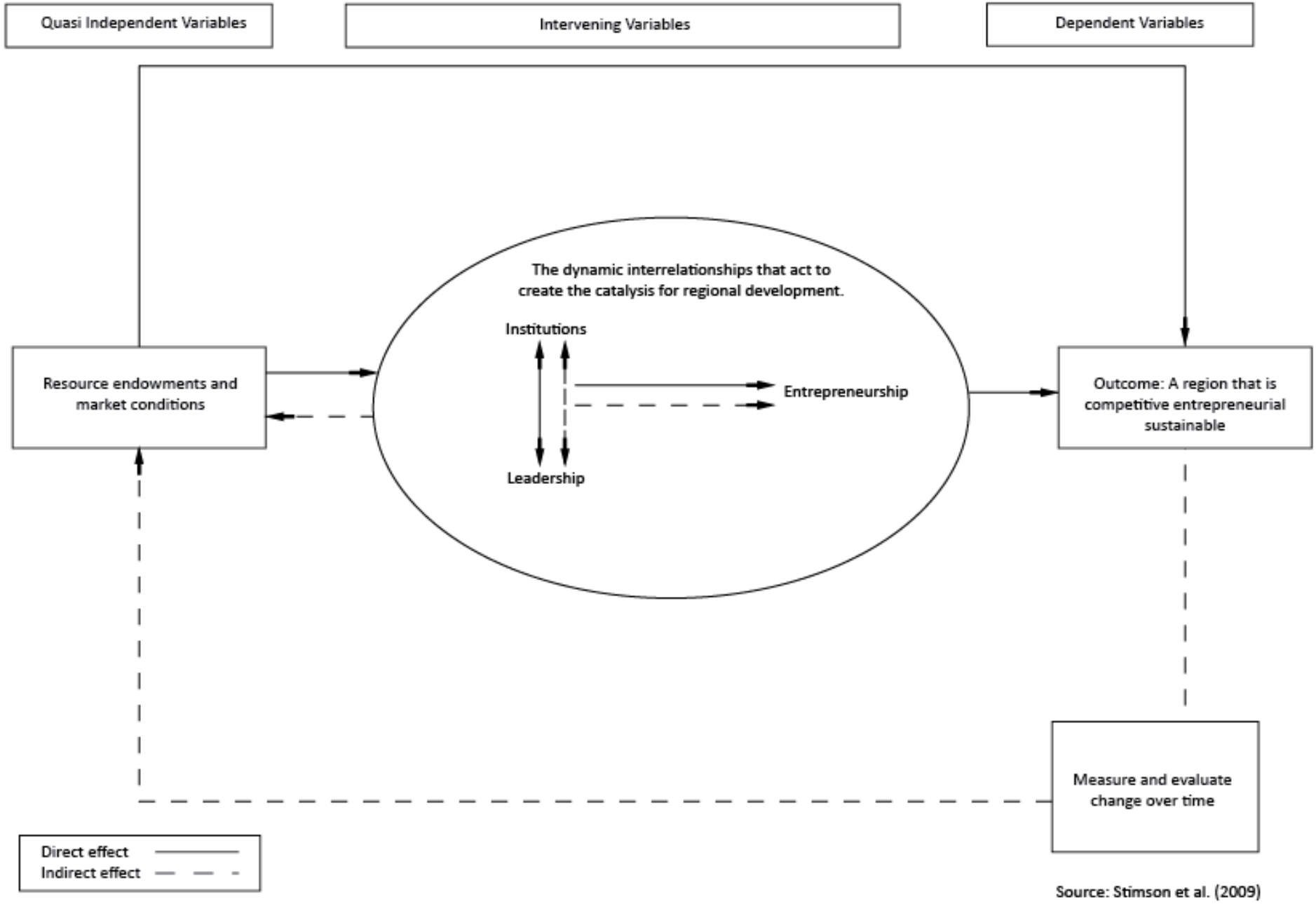
Organizational and institutional structures can be considered as an important factor in the development of endogenous growth conditions. Since this has been considered as important by Stimson et al. (2009) the institutions have to be taken into account in this research. Stimson et al. (2009) came up with three main actors in the development of human resources:

-governmental agencies

-education institutions

-innovative organizations and entrepreneurs

Figure 1: Model of endogenouos growth



Source: Stimson et al. (2009)

In this research the model of Stimson et al. (2009) will be used as a blueprint for assessing the regional endogenous growth of a rural area. The research will specifically focus on two elements of this model: the institutions and the outcome of the model. Besides, Vredegoor (2011) add two new intervening variables to the model of Stimson et al. (see Appendix A).

These factors will be investigated with respect to the Indonesian Seaweed industry. Moreover, this report will create a critical assessment of these endogenous factors and the influence that they have on regional economic development.

Focus of this research

The focus of this research will be on three different factors that are recognized by Vredegoor (2011) and are depicted in the modified model of Stimson. Although, Vredegoor (2011) determines cooperatives as a part of co-management in developing regions, this research will focus on cooperatives as a single independent factor of influence.

Cooperatives

According to Faulkner (2009 : 611), cooperative activity among organizations *"has become increasingly necessary due to the limitations and inadequacies of individual firms in coping successfully with a world where markets are becoming increasingly global in scope, technologies are changing rapidly, vast investment funds are regularly demanded to supply new products with ever-shortening life cycles, and the economic scene is becoming characterized by high uncertainty and turbulence."*

Faulkner's explanation for cooperative strategies is mainly applicable to economies in the Western world. However, in developing countries the motivation and circumstances to cooperate are probably different. This is based on interviews with several lecturers of ITB, the university of Bandung. In this research the motivation and circumstances to cooperate will be discussed, specifically in the relations to the institutional factors.

In the modified model of Vredegoor (see Appendix A), the cooperatives are included in what he refers to as 'human coordination'. At the end of the research of Vredegoor (2011) it is concluded that there is new research needed to investigate and show what role cooperatives can have in an underdeveloped region.

Institutions

Stimson et al. (2009) define institutions as of vital importance in any society. The institutions provide the rule structure and the organizations within a society for it to operate. In this research the focus will be on the local government, educational institutions, and workers associations.

Outcome

Stimson et al. (2009) define the outcome, and therefore the dependent variable in this framework, as the 'degree to which a region has achieved a competitive performance, displays entrepreneurship, and has achieved sustainable development', in other words, the degree of success in developing regions.

They mention three different parameters to measure success factors in their model: competitive performance, entrepreneurship, and sustainable development. However, more parameters can be recognized to measure the degree of success.

The most important degree of success is innovation. According to Howells (2005) there is a continuing link among innovation and economic performance. Especially, in Western countries there is a clear correlation between innovative activity and economic activity and performance. In addition, 'development' is interpreted by Feldman (2000) as the improvement of the region's capability to produce, absorb and utilize innovations and knowledge through learning processes. Therefore, in this research the focus will be on innovation as the parameter for economic development.

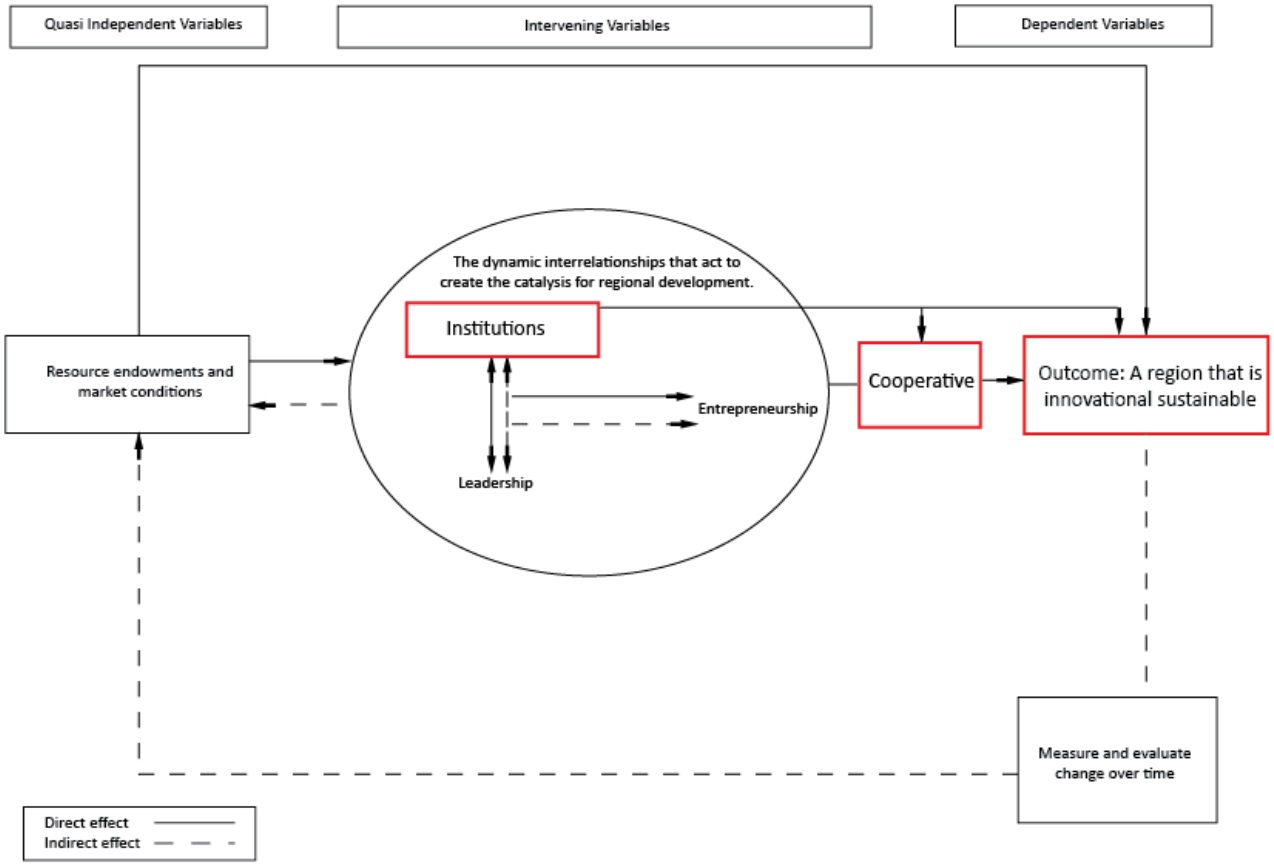


Figure 2: Schematic overview of this research

The research objective can be considered as three-fold. The first objective is to assess the intensity level of collaboration in a developing region. The second objective is to find out how institutions on different levels influence the process of collaboration. Finally, the third objective is to find proper mechanisms or tools to assess or even estimate the influence of collaboration and institutions on innovation in a developing region. The objectives should result in a hands-on method to explain whether and how institutions have to interfere in cooperatives and collaborative strategies to influence innovation that takes place on a regional level.

In other words, the research objective is to provide insight in how innovation in developing regions is influenced by collaborations and institutions. And whether institutional interference or cooperatives provide a base that supports and stimulates innovations on a regional level.

Research question

The research question considers the main concepts that are discussed in this research and is the central question that should be answered. The research question is:

What is the impact of collaborations, collaborative strategy and institutional interference on sustainable competitive development of innovation in a developing region?

In order to answer the research question, several sub questions are raised and divide this research in proportioned and content related chapters. This increases the legibility of this research and improves the understandability.

Sub questions

Four sub questions are addressed with the aim to answer the research question. First, it is important to understand one of the main concepts in this research. Literature about cooperatives is extensive since cooperatives are a well-known phenomenon. The cooperatives will be researched in a developing context in the first sub-question.

1) *What are cooperatives and what is their role within a developing region?*

Second, other main concepts in this research have to be explained, these concepts are institutions and institutional interference. The importance and influencing role of institutions, especially in developing regions, should not be underestimated. Therefore, the second sub question is:

2) *What is the role of institutions in developing regions and what is the influence of institutional interference on collaboration?*

Third, the dependent variable in this research has to be defined. Furthermore, interesting would be to research if there is a stimulation of the institutions or cooperatives. Therefore, the third sub question is:

3) *What is innovation in this respect and is innovation stimulated on a regional level?*

Fourth, in order to assess or estimate the influence of institutions and collaboration on regional innovations there has to be defined a proper approach to determine the influence of the main concepts on the dependent variable. So, the fourth sub question is:

4) *What is proper approach to determine the influence of collaboration and institutional interference on a sustainable innovational development?*

Case study and field research

Since this research is focused on a specific area a field research has to be conducted. Several benefits and limitations of case studies have to be taken into account. Yin (1994) argues that the value of case studies in research is a rich, empirical description of particular instances of a phenomenon that are typically based on a selection of data sources. The empirical data will be conducted in the field study and will be compared to the model of Stimson et al. (2009) and the literature. According to Eisenhardt and

Graebner (2007) state that theory building strategies that are embedded in rich empirical data of these field studies will produce theory that is accurate, interesting and measurable.

Although case studies are being criticized of being subjective, however, well conducted research is in practice surprisingly objective because researchers are closely adhered to the data the researchers retrieve.

Another point of criticism about case-studies as research strategy is the lack of internal validity due to a so-called investigator bias. An investigator bias can influence what is observed and reported (Thomas, 2006). To avoid investigator bias, this study makes use of more research methods. Different methods, observation and interviews, of research are used to collect the necessary data and strengthen the internal validity of the case study.

A final concern of conducting case-study research is its limited external validity since it is impossible to generalize from a single case (Thomas, 2006). Therefore different cases will be researched to test the central case study in Bau-Bau.

Sample selection

The interviews were conducted in three different areas of Sulawesi. Two of them are mainly seaweed cultivation areas, Baubau and Wakatobi. The other area is the region of Pinrang that is mainly a shrimp and fish production area, although, there is often a combination of seaweed and fish production.

In Baubau, the hinterland has been visited since these hinterlands can be considered as the seaweed cultivation areas. Besides, Wakatobi can be considered as one of the hinterlands of Baubau since the transportation of seaweed is coordinated and transported through Baubau.

The interviews with institutional actors are conducted in Baubau, Pinrang, and Jakarta. These institutions are selected based on their interference with the local seaweed production. The institutions that are selected are local governmental agencies, national research agencies, farmer associations, and educational institutions. In most cases the institutional actors were willing to cooperate in my research, although there were some problems and weaknesses.

1. Cooperatives in developing regions

The question that is raised in this first section is: *What are cooperatives and what is their role within a developing region?* To start this research several concepts had to be defined. First, the 'cooperations' have to be defined and the role the 'cooperations' have in underdeveloped regions. This section will provide answers on collaborative strategy and cooperation between organizations in underdeveloped region.

1.1 Collaboration between small and medium sized enterprises

In order to define the cooperation, the actors involved in the cooperation have to be researched. According to Tambunan (2006) the enterprises in the agricultural sector, which is investigated in this research, mainly encompass the small and medium sized enterprises.

Figure 3: Number of enterprises in Indonesia

Number of enterprises in 2003 and 2004 in Indonesia

Sector	**SMEs**		**LEs**	
	2003	**2004**	**2003**	**2004**
Agriculture	25.457.190	25.477.756	58	59
Manufacture	2.711.522	2.743.858	710	719
Trade, hotel & restaurant	9.071.331	9.845.682	434	471
Services	2.433.483	2.254.317	261	242
Other	2.861.810	2.900.216	706	757
Total	42.535.336	43.221.829	2.169	2.248

Source: Tambunan (2006)

As can be seen in figure 3, the main type of enterprises in the agricultural sector are small and medium sized enterprises (SMEs). They account for almost 60 per cent of all the SMEs in Indonesia. According to Tambunan (2006), three governmental institutions define (1995) small enterprises as a business unit with a total set of assets of up to approximately 16.146 euro.

Collaboration can take place in different ways. There are multiple formal ways in which the small enterprises can collaborate. However, there are also many informal manners to collaborate. This means

that in most cases the collaboration is not formalized and can take place for instance between two, or more, independent people that share knowledge. The type and intensity level of cooperation depends on social and institutional conditions according to Travers et al. (2011), including the individual incentives that play a major role in determining the level of cooperation that will be achieved.

1.2 Strategic Collaboration

A strategic agreement is a well-known phenomenon and it can take place in a wide range of situations. Although alliances can also expose firms to risks, such as strategic information leakage to a collaborator (Hamel, 1991) or opportunistic behavior by alliance partners (Dickinson et al, 2006), they are critical for acquiring skills, knowledge and other resources from outside the organization. The capacity to collaborate has, therefore, become a core competence for large organizations (Doz and Hamel, 1998) and a necessary issue for smaller ones.

Strategic alliances are described by Hill et al (2000) as a long-term cooperative agreement where two or more organizations share risks and resources, and gain knowledge or access to markets, in order to improve the firm's competitive position. In addition, Devlin and Bleakely (1988) recognize that strategic alliances take place in the context of a company's strategic plan and seek for improvements or changes in a company's competitive position. Besides, Das and Teng (1998: 491) define this phenomenon as: ''inter firm cooperative arrangements aimed at achieving the strategic objectives of the partners''.

Todeva and Knoke (2005) recognize thirteen different types of strategic alliances (listed in Appendix B). These types differ especially, from top to bottom, in the intensity of collaboration. Intensity in this case means the integration and formalization of the relation among the companies.

The different types of alliances are important to take into consideration, because with these different types there are accordingly different ways of collaboration and therefore different opportunities and threats for the enterprises that are involved.

Since this research is focusing on cooperatives, this definition will be highlighted. The cooperatives are defined as 'a coalition of small enterprises' by Todeva and Knoke (2005) which is in line with the expectancy that in the seaweed sector in Indonesia small enterprises are the majority.

Collaboration with governmental institutions will be different from collaboration among firms. Naturally, networking and a close personal relationship with individuals within a governmental organization will improve the chances to collaborate.

Small organizations cooperating, success and failure

Strategic interorganizational relationships are in this research specifically focused on smaller organizations. As mentioned before, in this local economic development in the agricultural sector the small enterprises play an essential role, since the majority of enterprises can be considered as small. In general, there can be many strategic motives to undertake a strategic relationship. Todova and Knoke mention several reasons, including enhancing their productive capacities, to obtain competitive advantages that supports them to increase profits, to cut uncertainties in their internal organizational structures and external surroundings, and to increase the change for future business opportunities. Furthermore, the performance of small organizations can be improved by strategic alliances through the sharing of explicit and tacit knowledge. According to Lee (2007), technical capabilities of the partner firm influence the performance of the own firm. The performance can be enhanced by sharing these capabilities in codified and explicit form. In addition, Huber (1991) also claims that one of the factors influencing the success of gaining multiple interpretations is through co-operating in a strategic alliance. Besides, Nevis et al. (1995) claim that organizational learning is higher when more interpretations are developed.

In other words, two or more organizations that are co-operating with different resources and complementary capacities within a strategic alliance is an ideal platform to learn. However, risk of leakage of strategic and vital information can be high.

Developing new products is, due to the rapid pace of technological development and innovation, an increasingly high cost and therefore a high risk activity (Devlin and Bleakley, 1988). In case of firms in an underdeveloped region, the impact of new product development is very high and very time consuming. Besides, most small companies are not able to develop their own new products, so a strategic cooperation becomes necessary for its innovative capacity.

As mentioned before, the company is exposed to risks by choosing a strategic alliance. Some researchers believe that a failure rate of 50 percent or more is measured for strategic alliances (Devlin and Bleakley, 1988; Park and Ungson, 2001). This literature assessment is, however, applicable to organizations in economically developed countries. Besides, alliances among competitors tend to be successful in the short-run, because of synergies through consolidation of overlapping market, product positions and economical scale benefits. This can be very interesting in case of the organizations in Indonesia, because synergies and economic benefits of scale that can be obtained could lead to cost savings and improving efficiency. However, misalignment between strategic goals, and the individual interest which is at the

expense of the long-run and valuable collaboration could cause alliance failure. Additionally, collective benefits for a strategic alliance are long-term oriented, while the opportunity costs from cheating on the alliance partner is more short-term. To what extent this can be applied in the case of underdeveloped regions and the small scale organizations, has to be investigated.

Attaining the individual organizational goals in the short run without realizing the uncertainty of the long-term benefits leads to rivalry. A prisoners' dilemma can exists because of the lack of trust between collaborating partners. However, since these companies in underdeveloped regions are different from 'regular' business concepts. The impact of cultural differences, for example, between western and Indonesian should not be underestimated. To evade the prisoner's dilemma, Gulati et al. (1994) suggest to adopt a sequential decision making process rather than a simultaneous process.

Another reason why strategic alliances fail is because of managerial complexity (Park and Ungson, 2001). Essentially, the reason to collaborate is often because the cost of specialization exceeds the cost of coordination. However, coordinating a collaboration can be very hard and costly. For example, different company cultures and characteristics can influence the knowledge sharing process.

1.3 Collaboration as a strategy in developing regions

Collaborative strategy

"Increasingly networks and strategic alliances are part of the strategic infrastructure not only for business but also for regions enabling them to operate successfully in the new economy" according to Stimson et al. (2006). Networks are human chains of interaction that pass on, receive, direct and diffuse information and knowledge between people. However, alliances are generally more tactical aspect of networking and involve (usually commercial) relationships entered into for mutual benefit between two or more entities having compatible business roles (Segil 1996). Different types of alliances and network structures play key roles in the regional economic development process.

Strategic alliances can take different forms, ranging from a memorandum of understanding to cooperate on specified matters, to contractual obligations between alliance parties. Strategic alliances are phenomena that have also been emerging in the context of regional economic development.

These type of cooperation may assist in the economic development of regions by developing a virtual critical mass of core business services in advance of providers being located on site by:

-building immediate access to networks, markets, information, services, for investors and developers;

-enabling the development of incentive packages to potential customers and investors, and;

-giving regions the key of business architecture that will create competitive advantage over competition from regions elsewhere.

According to Stimson et al. (2006) collaboration as a strategy requires one important component to transform the benefits of alliances, networks and partnerships into development outcomes. This component is the catalysts. These catalysts can be persons, mechanisms or instruments that facilitate linkages and transactions between businesses, government and community to:

-classify prospective business investments contracts and infrastructure;

-create networks and clusters of core competencies attractive to business;

-draw together people, resources and technology;

-facilitate investment through a range of finance, land and business packages.

Stimson et al. (2006) also state that “there is a growing realization that no organization has the resources to develop and trade new products or services in isolation”. And if so, the change that the business is able to handle all the aspects, such as production, marketing, and distribution well, is very low. So, businesses are becoming dependent on networks, alliances and other forms of partnerships to enforce a competitive advantage over their competitors.

2. Institutions and institutional interference

As stated by Travers et al. (2011), the institutional conditions have a strong influence in the circumstances that are created for enterprises such as cooperatives. This section is divided into three subsections: institutions, their role in developing regions, and institutions collaborating. This section provides an answer to the question that is raised: *What is the role of institutions in developing regions and what is the influence of institutional interference on collaboration*

2.1 Definition of institutions

Institutions have a significant influence on a region. North (1990: 7) claims that *"institutions, together with the standard constraints of economic theory, determine the opportunities of society."* Moreover, organizations are established to take benefit of those opportunities and as organizations evolve, the organizations modify the institutions. Therefore, these organizations and institutions are interrelated and share a 'symbiotic relationship'.

North (1981: 201) defines institutions as *"a set of rules, compliance procedures, and moral and ethical behavioral norms designed to constrain the behavior of individuals in the interests of maximizing the wealth or utility of principals"*. Constraints is the keyword, according to Glaeser et al. (2004), they need to be reasonably permanent or durable since people also can make rules in a temporary role as president or mayor, these people cannot be considered as an institution.

Furthermore, North (1990) states that institutions provide the 'rules of the game'. The institutions design a framework where interaction takes place, interaction among human beings and organizational entities. Furthermore, institutions provide a structure to day-to-day activities by reducing the uncertainty. The institutional limitations concern the conditions that influence the activities initialized by individual members of a community. Therefore, institutions are defined as the framework where all human beings, including businesses, interact.

The definition of North (1981) is adopted in this research and is applied as the entities that design the framework of rules, compliance procedures and behavioral norms. They provide the structure for individual members of society to support the day-to-day activities of these individuals.

2.2 Role of institutions

The role of institutions, especially in regional economic development, is crucial. Institutions provide the structure in which businesses and communities have to operate. North adds that *"institutions reduce uncertainty by providing a structure to everyday life"* (North, 1990: 3). He continues, *"…Institutions, together with the constraints of economic theory, determine the opportunities of society"* (North, 1990:

4). This is vital for developing regions so that enterprises can benefit from the structure that is provided by the local government and by other institutions. However, in almost every case the local government and the other institutions, where enterprises in developing regions depend on, are uncoordinated and have a lack of clear structure.
Stimson et al. (2009) do add some implications to the role of institutions in regional economic development. They claim that institutions can have a powerful effect on regional development, this effect can be positive or negative. In essence it is not the nature and structure of these institutions; it is the ability to be fast and flexible to adjust to the changing environment.

The literature on regional economic development uses a different terminology. For instance, it is important to distinguish among governance and government. Governance can be described, according to Stimson et al. (2009) as the act, manner or process of governing. Government is the system that consists of elected or appointed individuals that form a governing group of a nation, province or region to conduct the policies and interests of an organization. Besides, there has to be made a distinction between other terms as well. Both, 'institutions' and 'institutional arrangements' are used in a wide range of situations of process and structural issues, but also to the situations that are influenced or provided by the institutions, processes and structures. For instance:
-infrastructural and facilitating services;
-monetary and fiscal systems;
-laws and regulation of the state;
-the organization of territory.

These fields are influencing the interactions among public, private sectors, and the community in a positive or negative way. Blakely (1994) states that there is a need to have suitable 'institutional arrangements' to manage and financially support the regional economic development strategy process. Moreover, to make sure that the implementation of plans and actions are organized appropriately. Institutional capacity building is in many cases part of the implementation of plans and actions that result from the regional economic development process. Estimating the ability and capacity of regional organizations to initiate, undertake and implement local economic development strategy planning as a fundamental component of the tasks of that process.

2.3 Institutions and cooperation

The way institutions support or stimulate cooperation is important for the agricultural firms in Indonesia. Since institutions have a significant influence on a region, by stimulating or impeding cooperation. This is supported by scholars as Vazquez-Barquero. Vazquez-Barquero (2002 :12) points out in his study about how institutions can structure the capital gathering process and as a result the economic development of cities and regions. According to Vazquez-Barquero the institutions the institutions are able to:

-decrease the transformational and production costs

-increase trust between important actors (economic and social actors)

-improve entrepreneurial capacity

-provide learning systems and relational mechanisms

-strengthen networks and cooperation among actors

The institutions are able to 'strengthen networks and cooperation'. This shows that institutions have or can have a significant influence on collaborative initiatives in a developing region. Besides, the different fields that are stressed by Vazquez-Barquero are quite important in cooperation between different actors in the region. First, businesses and sectors that are supported by governmental institutions are seen as stable and have therefore a reliable image. This results into trust between organizations and provide them

Second, the entrepreneurial capacity is needed to have a positive impact on the formation of cooperation and other forms of collaboration. The benefits on starting their own business or even their own cooperation starts with entrepreneurship.

Finally, the networks and cooperation among actors in the region are strengthened by institutions. Especially, in developing region these cooperatives are used to control the individuals involved. The control and assessment of the individuals provides the local government insight in how large the sector is and how they are operating. Furthermore, it provides them insight in how they can support the specific industry or individuals. This insight is needed since the local government in developing countries does not always have access to accurate data.

2.4 Institutional decentralization

Institutional interference in the developing region can increase by the empowerment of local governmental institutions. One way to empower local institutions is by decentralization of power and decision making. Decentralization of power enables the local government, or even in some cases the community leaders to make the decisions on a local level. These decisions can provide the necessary

specific needs in a region that are noticed by the community leaders. Weiss (1988) recognizes this decision making process as a key ingredient for a close relationship between governmental organizations and local and regional businesses. This can support the materialization of entrepreneurial ideas and stimulate the innovation in the community.

Decentralization, it is claimed by Pollitt and Bouckaert (2002), is about layers that increase the distance between the national government and the regional authorities. These layers hinder the difficult task to reform the national, and therefore broad, goals into narrow specific and manageable objectives. Besides, they claim that the more centralized nations do have a narrow focus on output and results, while on the other hand the decentralized nations have a more strategic concern including impacts and policies. Decentralized institutional decision making can result in a region that is able to make specific decisions to support and stimulate the local businesses and economic growth. In case of innovation management the theory is discussed in the paragraph about innovation policies.

3. Innovation and regional development

The outcome of the model is ´a sustainable competitive region´ To assess the influence of cooperation in this model and, therefore, in a developing region the focus in this research is on the innovative capacity of this region and how that is influenced by institutions and private collaborative entities. The question that was raised is: *What is innovation in this respect and is innovation stimulated on a regional level?*

3.1 A competitive entrepreneurial sustainable region

Regional economic development in a developing region can be measured in three different ways, according to Stimson et al. (2006). First, it can be measured by benchmarking the region and therefore has to be compared to similar regions in similar circumstances. Second, the degree of entrepreneurial activity that can be measured within the region. And finally, the degree to which the region has attained a sustainable development. This entails measurement of economic growth and performance, social equity, and environmental quality indicators. The indicator to assess the development of the region in this research is innovation.

3.2 Types of innovation

In order to discuss the innovations that takes place in agricultural sectors in Indonesia, the different types of innovation have to be addressed. First there will be a made a definition of innovation. Since the definition of innovation can differ, the definition of Dosi (1988a) will be adopted in this research. Dosi's definition is used by De Propris (2002: 338) as*: "innovation concerns the search for, and the discovery, experimentation, development, imitation, and adoption of new products, new production processes and new organizational set-ups"*. Innovation can take place in many forms, branches and industries. De Propris (2002) recognizes four different types: product innovation, process innovation, radical innovation and incremental innovation. Radical is associated with the introduction of a new and fundamental change of product or process in the market. In other words, the innovation is new to the firm or new to the market. Although, other scholars classify radical innovation as new to the world that has a serious impact on the world (i.e. invention of the internet or steam engine). Incremental innovation refers to the minor change that is done to the existing products or processes within the enterprise. These definitions are retrieved from Western oriented research, therefore, a closer look has to be taken on innovation in an agriculture industry in a developing region.

3.3 Innovation in agricultural industries

In regional development, especially in agricultural settings, innovation is an important driver of social and economic transformation. According to Hall et al. (2007) there are five important principles, from

decades of experience and research, which emerge. First, there is little success in technological innovation unless technology users are consulted and involved in an early stage of development. The success rate will be low, even if the planning and establishing of research centers for developing agricultural technology is well managed.

Second, the development of technology is a small component of a larger process of production, supply and use of technology. That is what innovation is about, not just by inventing a new technology but apply the knowledge and technology in the region. A technological change does need additional adaptations and complementary changes in the organizations. As a result, Hall et al. (2007) state that, in these situations, a set of players need to be involved for an innovation to take place. Third, radical innovation (i.e. a new crop or machine) hardly ever occurs. In many cases it is a chain of small incremental changes in technology, strategy or organizations.

Fourth, all aspects of technology and supply processes need to adapt to specific characteristics of markets and agricultural conditions. There is not a 'one size fits all' formula for innovation. Because of the context specificity, the agricultural context, local processes of experimentation and learning are of great importance to the innovation process.

Finally, it is the institutional context of technology development and promotions that determine whether these processes will operate effectively and thus whether innovation is enabled or not. Especially, when poor households are involved, as a subject, in an innovative processes, specific institutional and governmental innovations are required.

Difficulties

There are many difficulties in agricultural innovation. Especially, in developing countries and regions the agricultural innovation presents some particular problems which are worth highlighting. The contrast, to industrial production, Hall et al. (2007) mention is that agricultural production is different in four main respects.

-The production context differs highly among location (type of soil and influence of climate) and, furthermore, differs over time (insects, markets and climate).

-The agricultural sector is divided into very large numbers of uncoordinated production units, the farmers. The fact that the farmers are uncoordinated leads to (higher) heterogeneity. Furthermore, the social variability, like wealth, ethnicity, and individuality, is also very high.

-Since biological material, i.e. new seed varieties, represent much of the agricultural technology, the heterogeneity of the products is higher. Biological material is influenced by production conditions as climate and soil.

-Agricultural technology is viewed as two diverse types of economic good: on the one hand as private goods like seeds, fertilizers, pesticides and machines; and on the other hand as public goods such as the goods that are (in economic terms) non-excludable and non-rival. In general these goods that Hall et al. (2007) refer to include information and training.

Hall et al. (2007: 8) continues that *"the character of a good does not depend on whether it is produced by the public or private sector, but on these different properties. Nevertheless, planners have used it as a way determining where the public sector should focus its efforts and what should be left to the private sector. This is not without problems. Not only does this give responsibility for different parts of the innovation process to different agencies, it also suggests that these roles are mutually exclusive, and independent of contexts, particularly the degree of institutional development. This is particularly problematic in poor countries, since the private sector may be poorly developed and reluctant to take risks in setting up manufacturing and distribution arrangements."*

To conclude, to assess the innovation in the region the empirical data gathering in this research will be on three different types of innovation. The first, *product innovation* refers to the new products that are produced by the cultivators. Although, Hall et al. (2007) make a distinction between two types, the private goods (seeds, fertilizers, pesticides and machines) and non-excludable goods (training and information). In this research, these goods will refer to process innovation. Second, the *process innovation* refers to new manners that influence the process of manufacturing case quo aqua cultural activities.

Furthermore, the definitions of *radical innovation*: a product or process that is new to the firm or market will be modified to the region under research. So, the definition that is used in this research will be: a product or process that is new to the region. *Incremental innovation* is the slight modification of an existing product or process.

3.4 Innovation policy in regional economic development

Since this research is not a matter of counting the innovations that have taken place, but more to investigate whether innovation is stimulated it is important to see what the governmental policies are. There are many possibilities to stimulate innovation. The interesting part in this research would be how innovation can be stimulated in developing regions. To estimate whether institutional interference is

preferred instead of innovational policies that are aimed to support the lower positions within the region.

The policy on innovation and innovation management can be viewed from different perspectives. Two perspectives are recognized by Howells (2005) both the top down and the bottom up perspective will be discussed. The top-down perspective entails the national perspective on innovation policies and, contrastingly, the bottom-up perspective is about national policies that are designed to stimulate innovation from a regional level.

Top-down perspective

From a top-down viewpoint, the policy on innovational matters directly links with national interests. These concern a more inter-regional perspective. However, it should be emphasized that innovation policy in general is driven by national importance and priorities.

According to Pavel and Pavitt (1987) several studies show that innovation is always a matter of national interest and besides, the sectoral specialization, trade performance and national growth. Sectoral specialization leads, according to these researches, to enhanced growth. Innovative sectors, in this case, have to be stimulated instead of stimulating poor innovative regions. The latter, should be sacrificed to the benefit of the innovative regions. This is, naturally, a matter of national interest to assess and estimate the opportunities and the chance of success of the different industries and sectors in the country.

However, Howells (2005) argues that national innovation policies have to have a regional dimension. There are three reasons why the regional dimension is so important. First, to be fully effective in the implementation, national innovation policies have to adapt to several variations in regional circumstances. In order to realize the most significant contribution to the national economy as a whole, the adaptation of the policies should be perfect on a regional level. Many policy solutions is not just a matter of an ideal 'one size fits all', especially not when the implementation in the region has to be realized. Second, the national policies will have a very different impact on the region. Even if a 'one size fits all' policy is implemented successfully, the result can differ across the regions. Third, the general implications of innovation policies are much broader than a difference in scientific or technological activity. When an innovation or an innovation policy is implemented this will affect the entire area, on a national level but also on a regional level. The national focused innovation policies can have a relatively big impact on the specific region. The net national innovative gain can also grow more in proportion to

the policy that is implemented by creating leverage by tailor the policy to the regional circumstances and economic conditions.

Bottom up perspective

A bottom up perspective, will lead to a different perspective on innovation policy in developing regions. Institutions such as province and local governments, authorities and other institutional agencies have to develop a specific policy on regional levels. However, these institutions also have to take into account the funding and programs that are developed on national level and even on international level. So in a bottom up situation the local authorities have to integrate the top down programs into their local policies framework. Therefore, the absorptive capacity of regional institutions and organizations become quite important. Moreover, top down policies influence the local policies in terms that the opportunities can be limited in a base for innovation that is created by the national governmental institutions.

Although, comparative advantage suggests that regions are still able to compete it is very hard for regions that have an innovation poor base. The region could, based on the comparative advantage theory of Ricardo (Dornbusch et al., 1977), select its best sectors to compete with international competition by a cluster strategy. However, this is quite a hard strategy to implement in a developing region. The regions that face a poor base for innovation have to be supported by national government and powerful institutions to create a base for innovation.

On the other hand, the regions that do have successfully created sustainable innovative knowledge are less evident. Especially, regions that have built this sustainable innovative knowledge from scratch on are quite rare. The problem that local institutions face can be quite conceptual in the way that it is hard to estimate what can make their specific region successful. Furthermore, there is a lack of knowledge within this region on how to design an innovation policy. Therefore, the local institutions and local government need the help of a top-down program.

In most national economies there is significant top-down influence on innovation policy. Although, there is taking a shift from top down to a more bottom up approach the evidence for this shift remains questionable (Lagendijk and Comford, 2000).

The difference between regional innovation (the bottom up approach) and national innovation (the top down approach) policies is also a matter of ‘best practice’ versus ‘bespoke’ according to Howells (2005). From a national viewpoint it would be the best manner by implementing a policy or system from one

region into another if it proved its complementary value. However, two main issues that have to be taken into account are 'transferability' and 'adaptability'. A system or policy that is considered as 'best practice' has to be transferred to a different region, although the regions have similar conditions the transferred practice has to adapt in the new situation. These processes are often underestimated by higher authorities.

In case of 'bespoke' policies, the policies can be very specifically designed for the region. This can be tailor-made to adjust perfectly to the local context regarding the local innovation structure. Moreover, this can result in new institutional activities and policy mechanisms in the region. Furthermore, the local agencies and institutions that are involved in developing these new policies have the opportunity to learn and, therefore, gain important experience about local innovations. However, tailor-made policies are quite expensive and time consuming. Therefore, governments take a high risk by implementing a local innovation policy based on a 'bespoke' policy mechanism. Besides, the agencies involved can become inward focused instead of outside, consequently this will lead to a decrease of the innovative capacity.

Howells (2005) listed the main advantages and disadvantages of the 'best practice' versus the 'bespoke' policies in regional innovation, see figure 5.

Figure 4: Best practice versus bespoke policies

'Best practice' vs. 'bespoke' policy mechanisms in regional innovation

Advantages	**Disadvantages**
'Best practice' policy mechanisms	
Proven elsewhere	Common design, may be difficult to adapt to local circumstances
Acknowledged as the 'best'	'Best' in what, or for whom?
May have been developed over considerable length of time in different circumstances	Locality may not have all prerequisite resources, institutions or mechanisms
Ready to use	May take time to adapt
May have 'knowledgeable' agency willing to help provide advice and support	May be difficult to understand; may have a large tacit element associated with implementation
'Bespoke' policy mechanisms	
Developed for the specific local environment	At the outset the policy is unproven, as it is unique and has not been applied elsewhere
Tailored for policy resources and 'time-frame'	May take considerable length of time to develop and test
Encourages local coalition-building and	May aggravate local tensions; local resources

development of expertise	and expertise may limited
Can be novel	Generally higher risk
Agencies that develop the policy can gain wider experiences through 'learning-by-doing'	Agencies that develop the policy may become inward looking and unwilling to learn from elsewhere

Source: Howells (2005)

According to Howells (2005) a 'pluriform' policy, most likely, will lead to the most successful outcome of innovation policy. Especially, regarding a regional innovation policy it is hard for local institutions to assess whether the invention can be realized. On the other hand, the national institutions are often not able to deliver a tailored system for the specific region.

These perspectives are interesting since the policies that are used in a specific region can influence the outcome of the model that is used by Stimson et al. (2009). The innovative capacity of the region may be influenced by the choice whether the national authorities of Indonesia choose to design national focused innovation or regional focused innovation policies.

4. Approach to assess the influence of collaboration and institutional interference on innovative capacity

To assess the influence of collaboration and institutional interference on the outcome of the model Doloreux et al. (2009) defined six characteristics. The assessment of the influence is needed to show how influencing the institutional interference and collaboration is on innovative capacity in developing countries. The question that was raised to find the assessment methods is: *What is proper approach to determine the influence of collaboration and institutional interference on sustainable innovational development?*

4.1 Influence of institutions

Doloreux et al. (2009) designed a regional innovation system on innovative capacity to show how interfirm communication, socio-cultural structures and institutional environments stimulate collective learning, continuous innovation and entrepreneurial activity. This framework is called RIS, regional innovation system. This specific system consists of two separated subsystems. First, this sub-system consists mainly of enterprises in the main industrial clusters of a specific region. This includes their suppliers, their customers and their support industries. The second subsystem is the institutional infrastructure. This infrastructure supports regional innovation, this contains the existence of research and higher educational institutes, training organizations, business associations, technology transfer agencies and finance institutions. All these organizations play a major part in the knowledge and entrepreneurial bases of a region.

In regional development the local government and other institutions support the enterprises in their day-to-day activities. The support functions of these institutions in a developing region are recognized by Doloreux et al. (2009). They recognize six main support functions of institutions to support enterprises, specifically the small enterprises, to increase their innovative capacity. The first is the diffusion of information, this means that institutions can act as a knowledge broker and diffuse scientific knowledge and/or technical knowledge. The second is competence building, this concerns the institutions that support organizations by providing training of employees. This can be training for low-skilled labour to advanced support of high-skilled professionals. The third support function Doloreux et al. (2009) distinguish is R&D support, institutions that provide small enterprises by providing a service to support in technical research to find new products, production solutions or process innovations. The fourth function that Doloreux et al. (2009) recognize is technical advice, the function where institutions or organizations provide enterprises with advice about technological issues. The fifth is financial support; this means the funding that banks, government organizations or private investors provide for the small

businesses. And finally, the sixth function is the business services which are the function to support enterprises to write a business plan or to bring new products to the market.

These six functions provide a framework that is a tool to assess the innovative capacity of a developing region, especially, where institutions and institutional interference are of vital importance. Figure 6 shows the elements of this tool.

Figure 5: Institutional support for regional innovation

Institutional support for regional innovation

Organization	**Description**	**Main support functions**
Institutional name	Description of their main activities	support that this specific organization provides

Legend: *D = Diffusion of information, C = competence building, R = R&D support*
T = technical advice, F = financial support, B = business services

This model will be used in the data analysis and will provide a better understanding which 'support functions' of the institutions are available in the region. In addition, based on the outcome of this model it can be concluded whether the region has a solid or weak basis for innovation.

4.2 Influence of collaboration on innovativeness

In order to assess the impact of collaboration on a regional level an approach to determine the influence of collaboration has to be selected. Since there has not been much attention to the influence of collaboration to innovation in a developing region, like the region Baubau in Indonesia, a tool is modified to make a proper assessment.

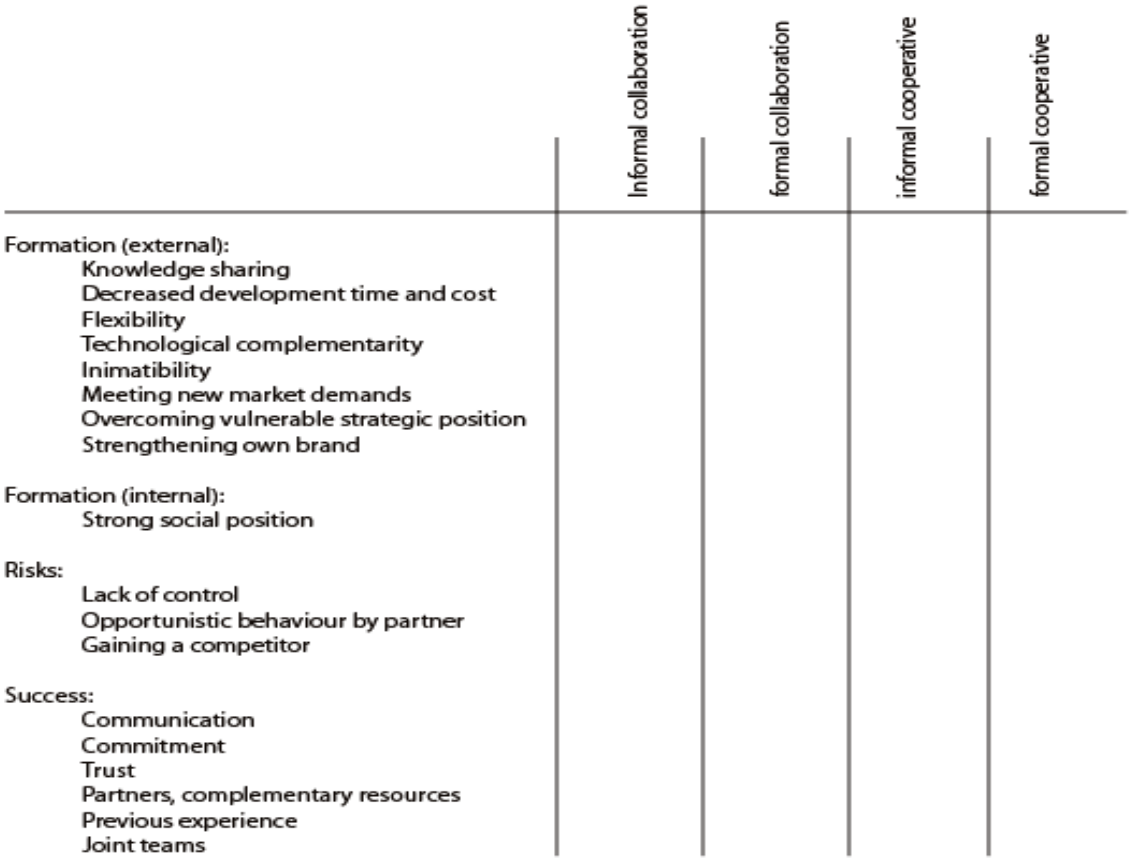
Since the innovative capacity of firms is enhanced and sometimes even rely upon collaboration with other organizations (Freeman, 1991, 1994), such as educational institutes (Jaffe, 1989; Cohen *et al.*, 2002), suppliers and customers (Lundvall, 1988; Sako, 1994; Shaw, 1994), and even competitors (Coombs *et al.*, 1996). It is quite important to assess whether the collaborating firms gain advantage of cooperation to increase their economic growth.

A tool that is designed by Olsen et al. (2008) is selected to assess the success of collaboration in product development. Olsen et al. (2008) gathered theoretical findings on factors that influence product development alliances formation and success. However, the model had to be modified since the model is applicable to developed countries in Western Europe. Therefore, the influence of context is not applicable to this model. In the model of Olsen et al. (2008) 'context' referred to the literature findings

about the complexity of technology. This could influence the willingness to join an alliance. Though, this is not relevant for the seaweed cultivators, since the challenges in this sector can be considered as equally complex.

Furthermore, the model that is designed by Olsen et al. (2008) will be used to assess the collaborative success on product development. However, in this research the applied model will be used to assess the collaborative success on innovation in general.

Figure 6: Influence of collaboration on innovation



The table will be used to analyze the empirical data to see which collaborative form is the most appropriate form to support innovation.

The figure is divided in two parts. First, there are the motives to formation, the risks, and the success indicators. Second, the figure distinguishes in the different styles of collaboration. The figure will be adjusted to fit in the developing region of Baubau.

Formation

The terms that are listed under formation (external) and formation (internal) are motivations to decide whether to join or set-up an alliance. The strong social position is quite important, especially in developing region, since this provides good relationships, status, and reputation.

These formation factors are primarily applicable to the individual organization. The success factors, on the other hand, are related to the relationship among the alliance partners.

Risks

Besides the motivation to join or set-up a collaboration to improve innovative capacity in the region, there are also risks for the participating organizations. The first, lack of control, refers to the fact that participating companies have to renounce partly from the power to take decisions.

Success

There are six success factors recognized by Olsen et al. (2008). First, communication is the success factors that assess the share of knowledge among the participating actors. Second, commitment refers to the commitment to the relationship and offering mutual support in the alliance. Another success factor is trust and refers to the reliance among the participating partners. Fourth, the complementary resources can be a success factor as it supplements the resources of the incumbent firm. Fifth, the previous experience can be an additional factor in developing an innovation since experience provides a base on knowledge so the alliance is able to learn from these experiences.

Finally, Cante et al. (2004) define joint teams as the team that is responsible in an alliance to execute all the processes in order to meet the alliance goals. These 'joint teams' need to be empowered to be able to reach the objectives.

In this section two models have been selected to use during the data collection. The empirical data can be categorized and interpreted by these models. In the end the models will show how the regional and national institutions support innovations and which form of collaboration can be classified as innovation supporting.

5. Methodology

This research will be performed on the topic of strategic cooperation and networking in the Local Economic Development projects. The methods used in conducting this research can be divided into four steps.

Step 1: Interview development

During literature study several questions will arise about the actors and their role in the value chain of the commodity that is produced in the area. Based on those questions an interview will be developed. These interviews should provide the necessary qualitative information.

Step 2: Interviews

Face-to-face interviews will be held with the selected actors in this research. The interviews will be semi-structured and will cover the following topics: strategic collaboration, knowledge transfer, institutional interference, and the innovation management. The interviews will be held in several projects in this region, this will provide information which can be compared to each other. The interviews will be transcribed and the main information provided by the interviewees will be subtracted and used in the results chapter.

Besides, during the field trips, obviously, observation will have an important role. The observation will take place during interviews and will contribute to the interpretation of the outcome of the interviews.

Step 3: Interview analyses

The data retrieved from the interviews will be compared with the literature findings. The results, contrasts, and interesting findings with respect to the main topics in this research will be pointed out. The empirical evidence that is found will be compared with theoretical models and academic theories.

Step 4: Conclusion and discussion

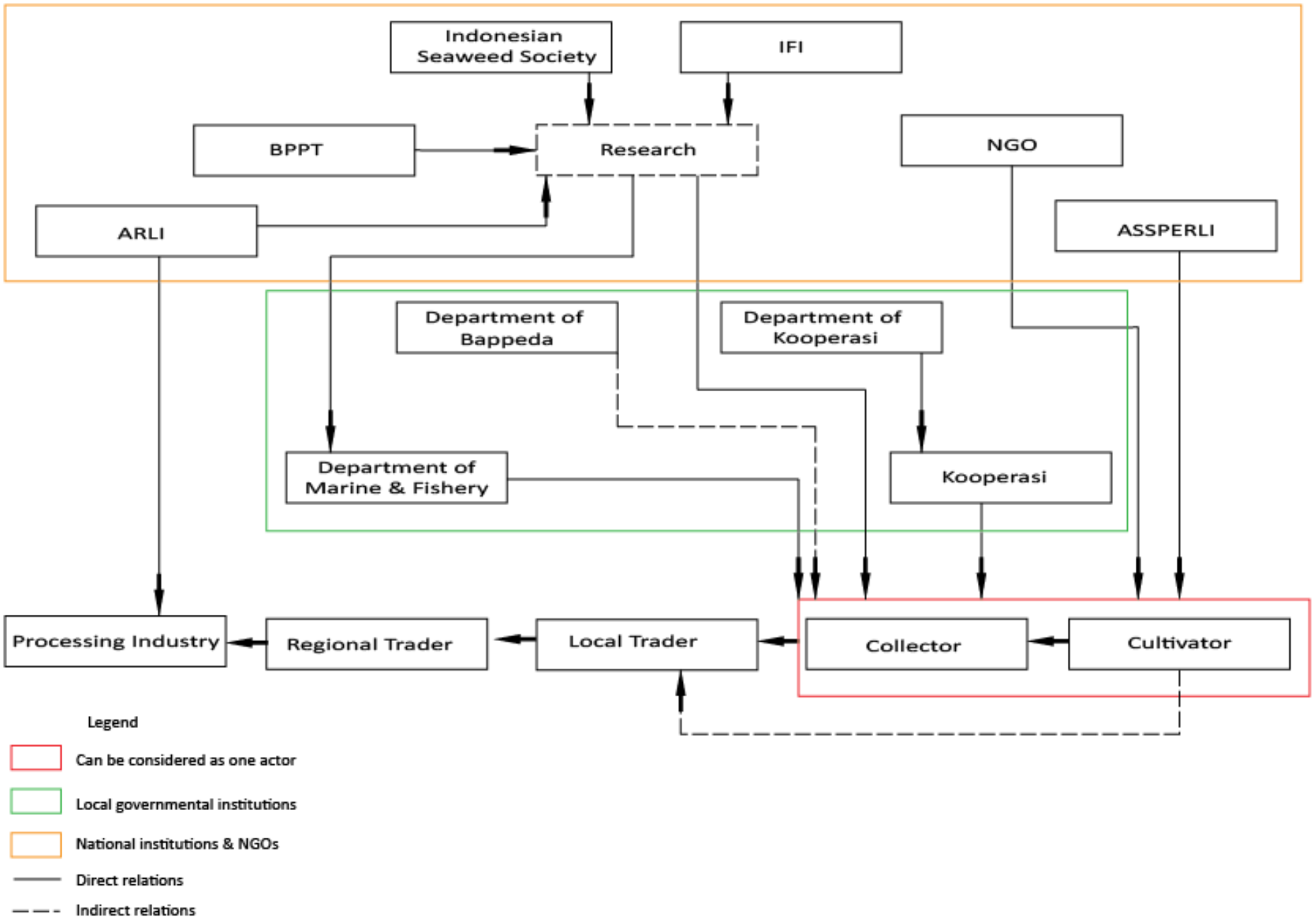
As mentioned before, the results section will display the most interesting findings in this research. Furthermore, based on the analyses of the interviews results of the findings of different strategic options will be aggregated. Conclusions and recommendations for further research can be drawn.

5.1 Overview of the industry

Many actors have a significant influence on the seaweed industry and, therefore, have to be taken into account in this research. By providing this overview it will be more understandable how the seaweed industry of Indonesia is structured and organized. Especially for outsiders, the model provides a schematic overview and improves the readability of the empirical results. The overview is not mutual exclusive, so not all the actors are considered since this would be too comprehensive. The overview is drawn based on the information gathered through interviews. Therefore, the actors that are mentioned by interviewees are included in this overview, since these actors can be considered as influencing.

Some explanations have to be made to clarify the model. First, the red box in the model can be considered as one actor since the collector also cultivates seaweed. The cultivator is the actor that, besides the cultivation, also charges some money to transport the local trader. Second, the cultivators sometimes decide to trade directly with the local trader, this is explained by the dotted line from cultivator to local trader. Third, the Bappeda (Local governmental department for planning and infrastructure) is indirectly involved to the cultivators since the Bappeda mainly supports the cultivators by providing infrastructural solutions. For instance, the Bappeda is concerned with facilitating harbors, housing and community facilities. Besides, the Bappeda diffuses information and updates the inhabitants of the cultivation areas. Finally, the dotted box of research is central in the 'national governmental institutions' since this represents the potential collaboration with other actors.

Figure 7: overview of influencing actors in Baubau



6. Results

In this results section the information derived from the interviews, conducted in Sulawesi, will be displayed and analyzed. The different parts in this section will focus on three parts/topics: The collaboration between actors in the rural areas, the role of institutions and their interference in collaborative activities, regional innovation and how it is stimulated by the institutions.

The overview of actors that influence the Indonesian seaweed industry (figure 8) is used to provide a better insight in/understanding of the Indonesian seaweed industry.

To provide a better insight in the Indonesian seaweed industry, the overview (figure 8) of the influencing actors that are involved in the seaweed industry in Indonesia can provide this insight.

In the red box (collector – cultivator) of the overview many forms of collaboration can take place. The collaborations vary between two farmers working together to large groups that form a registered cooperative.

6.1 Collaboration between cultivators

In developing regions the farmers collaborate in several ways and on several intensity levels. To distinguish among the different forms, the collaboration can be divided into two: formal and informal ways of collaboration. This distinction has to be made to emphasize the interference of authorities or institutions. These authorities and institutions do take, in some cases, an active, sometimes leading, role. So in other words, in formal forms of collaboration the government is actively involved in the development phase of the collaboration. In informal forms of collaboration, the cultivators initiate this type of collaboration.

Informal collaboration

In Baubau, seaweed cultivators tend to cooperate in groups to share information, help each other harvesting the seaweed and check the seaweed's quality and look for diseases. There are many groups of farmers which are set up without any formal structure and formal organization. These groups meet once in a while and discuss the cultivation techniques, problems that occur during cultivation, diseases and harvesting issues. The mutual relationships with other seaweed cultivators is, therefore, very important. First, the social aspect of this relationship is essential. The local villagers prefer a good relationship with the locals over a successful business. For Western people it is difficult to grasp these thoughts and the motivation of these people. Furthermore, in many cases the farmers cultivate their

own area, however, for discussion, exchange information, and even for trading they need the farmers in the community. Secondly, the local seaweed cultivator depend on the other villagers business wise. For instance, the local collectors are also seaweed cultivators. Therefore, the collectors have a central role in the cultivation areas. However, the collectors do not take advantage of their position.

Formal collaboration

Certain groups of seaweed cultivators are structured and above all initiated by the local government. The Department of Marine and Fishery Affairs initiated these groups, to structure the seaweed sector and control the resources they provide. By structuring the seaweed sector the local government obtains insight in the number of cultivators, collectors, and how large the seaweed production in the area is. Furthermore, the interaction with the groups provides the local government with accurate information, the needs of the local cultivators and the possible interventions that have to been done.

One of the main reasons for cultivators to join a group, joining a group is voluntarily, is the trainings that are given by the local government. These training contains the diffusion of information about cultivation methods, knowledge about using fertilizers, and protecting the harvest from diseases.

Another major motivation to join a group is that groups can have access to funds provided by the government. It is almost impossible for individual farmers to obtain funds to and to decrease the risk of repayment issues the government requires that cultivators join a group.

In a region like Palabusa, the surrounding area of the region of Baubau, the seaweed cultivators form groups of 5-10 people to structure their seaweed production. The government divided the cultivation area and assigned the resulting areas to the different groups. To strengthen the group and increase the loyalty among the members, the groups often consist of families and friends. This system was advised by the national government in Jakarta. As mentioned before, the government on a local level, but also even on a national level, initiate these forms/this form of collaboration and since the groups are obligated to register this will result in qualitative data about this industry.[1]

Since financial issues are one of the main reasons for cultivators to become a member of a group there are groups that are established based on a micro financing structure. These groups can be initiated by

[1] Interview Mr. Arif and Mr. Mail, seaweed cultivators

the government and also by several NGOs. The seaweed cultivators need these funds to buy necessary supplies, ranging from nutrition for their family to seedling, pesticide and tools.
Since the quality of the seaweed is hard to assess by the farmers, the traders are able to take advantage of them and assess a lower quality product, against a lower price. Therefore, the low seaweed price even forces the cultivators to sell their crops before harvesting. The strong need for cash lets the cultivators little choice and leads them to this desperate act which results in farmers ending up in a vicious circle.

The government and NGOs offer an opportunity to the cultivators to register in a group and provide them a micro financing system. These groups share a financial buffer, created by the cultivators by paying a monthly fee. This buffer can be claimed by anyone of the involved members to invest in their business or help them if the farmer has a temporarily lack of cash. When a claim of one of the members is made, the group has to assess whether the farmer can rent this money against a relatively low interest. This interest that the cultivator has to pay is used to enlarge the financial buffer of the group.

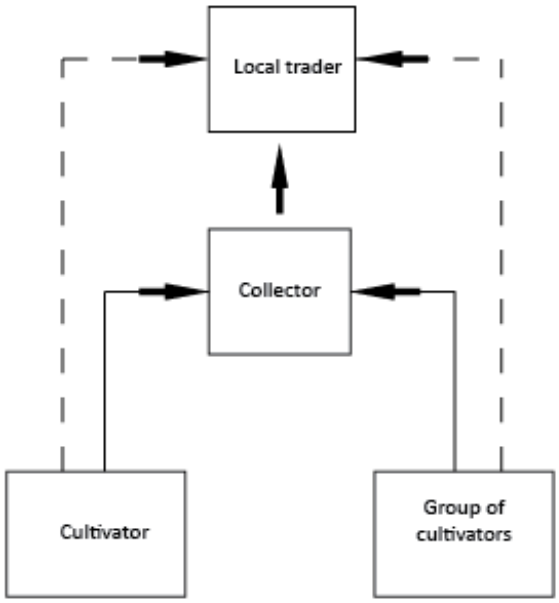
In general, the farmers join these groups for several reasons. Obviously, cultivators that have little financial means join for financial reasons. However, joining this group also creates a certain feeling of financial assurance. Besides the financial considerations, the main reason for joining a group is that the government asks them to. In fact they support the idea of being in a group and interchange/exchange knowledge, have training, and share a micro financing system. The cultivators are not motivated to invest a significant amount of time in the group. Farmers join these groups since it is an easy way to meet their financial needs.

There are, however, also many farmers that refuse to join the groups that are initiated by the local government. Individuals have several reasons to work alone instead of working in a group[2]. First, the cultivators in a group do not all put the same effort in cultivating the seaweed (as does). The passive attitude and laziness that are mentioned are also shown in the day-to-day life. Secondly, the autonomy to decide whether the cultivator trades with the local collector or the local trader is vital. Finally, the seaweed cultivator refuses to compromise on decisions of using cultivation techniques, use of pesticide or periods to harvest the seaweed.

[2] Interview mr. Abdul, seaweed cultivator

The training and interchanging knowledge that is provided by the trainers is also accessible for individuals, so in case there is a problem it is possible to join occasionally a group when the specific problem is discussed by other villagers[3]. These discussions do not take place in a structural meeting or organization. Despite of some benefits of joining a group he persists in working alone.

6.1.1 Collaboration between cultivators and traders/collectors



The cultivators and traders in the region of Baubau collaborate on an occasional basis. Once in a while, the local trader visits the cultivation area to assess the techniques that are used for production. In just a few cases the trader discusses how to improve the production techniques or advices how to improve the quality of the product. Since these traders visit the cultivation area on an irregular basis it can't be classified as a structural collaboration.

However there is another type of relation among farmers and traders. The traders are willing to assist the cultivators by lending them seedling and cash . This lending of seedling and cash comes with a mutual agreement that the harvest has to be sold to the trader and that the seedling or cash that is borrowed will be abstracted form the total revenue. However, funding or lending seedling in exchange for money is providing a service instead of collaboration.[4]

The farmers and collectors do cooperate more intensively, since the collectors visit the cultivators on a regular basis to discuss the way of production and the diseases that affect the quality of the product. The collectors have a central position in the communities. The agreements between cultivators and collectors are based on mutual trust and loyalty. Despite the need for financial resources, many cultivators are not willing to accept a higher price from others but will instead be loyal to their collector. Collectors within a cultivation area settle a fixed price and, therefore, there is no competition among the collectors. In fact, in some villages the oldest collector settles a price which is not to be questioned. In some cases,

[3] Interview mr. Abdul, seaweed cultivator
[4] Interview Mr. Junaidi, seaweed trader

however, the cultivators do trade directly with the local trader because they expect to obtain a higher price.[5]

6.1.2 Collaboration among cultivators and institutions

Many departments of the local government are involved in the seaweed industry. Several departments are more facilitating infrastructure and cultivation materials, rather than a partner in cultivating crops[6]. The Bappeda, for instance, is a department that is building and maintaining jetties, paths and roads that connects the hinterland with the central village.

The Department of Marine Affairs and Fishery ensures, however, that the assistance of the local government is much more than merely facilitating infrastructure. The government provides training to the local villagers to improve the quality of the products and the efficiency of production, in order to improve the quality of life of the communities in the hinterland[7].

The head of the Department of Marine Affairs and Fishery claims that the trainers have a positive impact on the cultivators and their business. Despite that it is argued that cultivators are very traditional and unwilling to change their techniques, the trainers are supporting the cultivators to learn them new techniques and new manners of cultivation. These new ways of cultivation and additional techniques can contribute to the efficiency of production and is, in addition, preparing the cultivators for changes in the environment. In other words, this training is needed so farmers are still able to deliver the same quality of products, even though the weather conditions are changing in an undesirable way. He head of the department states: "*The goal is to increase the quality of the seaweed, increase the productivity of the cultivators and decrease the diseases which can occur during the production process*"[4].

Beside all the positive contributions, the relation between the local government and the cultivating farmers can be improved. The head of the department mentions four improvements that should be made to assist the cultivators in a better way:

-Train the trainer; the trainer is not trained by the national government. In case there is a meeting or an update, the local government does not send the trainers, but a staff member instead. To increase productivity of the trainers the trainers themselves should get better training. Consequently, the knowledge is not effectively transferred to the trainers.

[5] Interview Mr. Rasidu, seaweed collector
[6] Interview mr. Abduh, representative Bapeda (local government)
[7] Interview mr. Andi, head of department of Marine Affairs and Fishery

-Submit the information about the quality of seed to the cultivators; the farmers do not always have the opportunity to buy seedling based on information about the quality. This information should be provided by the seller of the seedling.
-The farmers should not regenerate the seed; the farmers, in some cases, keep on regenerating seed from low quality seaweed. The farmers should buy better seedling to improve the quality of the product.
-In order to improve the quality of the cultivation process, the farmers need more budget. The local government is responsible for this working capital.

The head of the department of Cooperation does add some additional improvements that the local government should make to assist the local cultivators even better. He claims that the cultivators should get more training and the quality of training should be improved. Since there is a lack of structure in providing the training and the quality of the training it would be an improvement to set up structural training. Furthermore, the local government should provide machines to improve the efficiency, although, he understands that providing machines also includes the training to operate these machines. This can be very difficult since the cultivators are low skilled and are often not even able to read and write properly[8].

6.1.3 The role of a cooperative

The cooperation is a group of seaweed cultivators that collaborate on a structural base/basis with each other. This includes decision making that affects the entire group. In practice, this means that a few cultivators will have to take decisions for the entire group on a daily basis. There are two different types of cooperatives that can be distinguished. First the cooperative that is initiated by the government and second, the cooperative that is initiated by the cultivators.

Formal cooperative

In the region of Pinrang there are several cooperations that are set up by the local government. The goal of these cooperatives is to assist and facilitate the individual farmer or groups of farmers. The cooperatives is supported by the department for kooperasi that is part of the local government. The facilities that the cooperatives provide is mainly technical advice to the individual farmer, high quality seedling, and fertilizer. Furthermore, it is possible for cultivators to obtain funds for their businesses. These funds can help individuals to invest in their small enterprises. In some cases, the farmers use the

[8] Mr. Syamsuddin, head of department of Cooperation

funds to cover their costs for a short period of time. Also in the kooperasi there are many members that join the organization to obtain funds in an easy way. [9]

In this type of cooperation little innovation takes place. The kooperasi does not stimulate new techniques or machinery to the cultivators, while the farmers are very traditional and conservative, so little innovation is taken place. Besides, the cultivators obstruct any changes that is initiated. Moreover, if something new is implemented the cultivators tend to return to the former methods. In other words, it is hard to convince the local seaweed cultivators to adopt new initiatives.

[9] Mr. Mansyur and Mr. Sakti, Manager and employee of Koperasi

Informal cooperative

In 2009 a cooperation was established by an individual cultivator and, therefore, on his own initiative. The reason that he started this cooperation was three-fold. The founder explains that the main goal was to help the people in the area. Specifically, the founder wanted to improve the quality of life and increase the income of the members of the cooperative. Secondly, he wanted to provide the necessary tools for the members to cultivate more effectively and efficiently. And finally, he wanted to solve the problem of provided capital. It was very hard to get a sufficient capital, especially for the farmers who are not able to provide a pledge. Many cultivators in the area join his cooperative and this resulted in 483 participating cultivators, divided into 11 independent groups.

The individual members have to pay a monthly fee to the cooperation. The cooperative uses the fees of the cultivators to invest in three domains:

-the purchase of machinery and tools to lend to the farmers

-to invest in and improve the infrastructure in the area

-to provide capital to the individual farmers

The goal of this cooperation is to unite the cultivators in the cooperation. The founder emphasizes that it is important that the members are involved in the cooperative and feel a certain commitment to the other members. Besides, still wants to increase and improve the capital that he can provide the farmers with to invest in building new businesses or maintain and improve their current businesses[10].

Currently approximately thirty per cent of the farmers in the area became member of the cooperation. Some of the groups of farmers did not participate yet, however, the cooperative is still growing. The criteria to become a member are as follows:

-they should be member of a group

-initiative has to been shown by actively trying to become a member

-the farmer should be loyal. The cooperative has a black list of people that misbehave.

The cooperative also provides advice and training, which is partly supported by the government. In some cases the ´informal cooperative´ hires (external)trainers to give the seaweed cultivators additional courses on cultivation and harvesting techniques, however, the cooperative initiates these trainings. Furthermore, the cultivators are trained by (government) trainers that are being around in the field to

[10] Interview Mr. Syarifuddin, head and founder of informal cooperative

assist the cultivators if needed. This cooperation is well organized. There are representatives from other villages/districts that also want to start their own 'informal cooperative'. This cooperative can be considered as an example for the region. Although the interested representatives are capable, they do not see the benefits.[11]

The informal cooperative differs from the governmental cooperation. In the informal cooperation the members are willing to make a difference and improve their community and economic position.[7] The members of this cooperation show more entrepreneurial spirit according to the interviewee. One of the criteria to become a member is that the newcomer has to show involvement and active behavior.

The behavior from these members can be classified as entrepreneurial, since ideas are exchanged and information shared with other participants. Furthermore, this cooperation also innovates in the region by introducing new machinery. The new machines are also accepted by the cultivators since the cooperation is providing the machinery. The farmers are more willing to change if they are convinced by the cooperative and by their peers.

On the contrary, in the governmental cooperation the members only tend to get access to funds that is provided. The governmental cooperation is, in some cases, too much focused on the organization instead of the members, in the informal cooperative it is all about the members[7].

6.1.4 Conclusion

To conclude this part, four different types of collaboration can be recognized in this region. First, the collaboration among two individual cultivators can be classified as 'informal collaboration'. This entails that the cultivators do collaborate, however, there are no formal or legal strings attached. In most cases, the cultivators share information and discuss problems they face in cultivating or harvesting the crops. Second, collaboration between cultivators that is initiated by the government or other institutions can be classified as 'formal collaboration'. Third, the cooperative that is initiated by cultivators and where a certain commitment and active attitude is expected of the participating cultivators is classified as 'informal cooperative'. This form of collaboration is more formalized and concerns a longer time span than the 'informal collaboration'. Finally, the fourth form that can be recognized is the 'formal cooperative'. The cooperative is a formalized system that is initiated by the local government.

[11] Interview Mr. Syarifuddin, head and founder of informal cooperative

6.2 The role of institutions

In many cases the government initiates a collaborative activity between actors. These collaborations I consider as formal structures. These structures are formal because the government sets rules that the actors involved have to obey.

Furthermore, the local government assists the farmers by providing training and education. As mentioned before, the local government provides training for the villagers and farmers. The trainers have a positive impact on the cultivators and their business. New ways of cultivation and additional techniques can prepare cultivators for changes in the environment. In other words, it ensures that the cultivators are still able to deliver the required quality, even though the weather conditions are changed in a negative way.[12]

Farmer associations

The region of Baubau does not have an association for farmers that cultivate seaweed. The main Indonesian association of seaweed farmers is ASSPERLI and is established in Makassar, the capital of South East Sulawesi.

The head and founder of the largest Indonesian seaweed cultivators association, started the association because he noticed that on a local level the cultivators needed support to find a proper solution for the problems the cultivators were facing. The problems that seaweed farmers face are mainly cultivation problems and networking problems[13].

The ASPPERLI association requests its members to show a certain level of commitment and initiative. Therefore, the association does not invite the farmers to become a member. On the contrary, the cultivators have to take the initiative. Many regions have their own branch office. In total there are 50.000 members in Indonesia of which 5000 members reside in the region of South Sulawesi[10].

The government and the associations could cooperate more to assist and improve the position of the seaweed farmers. Today, the different governments have their own policy that has to be integrated into one plan. Furthermore, the ASSPERLI has some priorities to improve the quality of life of the seaweed cultivators:

-government should assist in creating good seedling as this is the basis of a high quality product. The department of agriculture and Department of Marine Affairs and Fishery should cooperate more to achieve this goal.

[12] Interview Mr. Abduh and Mr. Mukmin, department of Bappeda
[13] Interview Mr. Arfa, head of ASSPERLI

-government should provide more capital to support the farmers.

-training should be provided to increase the knowledge, because in general the farmers have a low level of education.

-the government should, like in the rice industry, provide a market situation with a stable price. The industry now is suffering too much from the price fluctuations[14].

6.3 Innovation in the region of Baubau

As discussed in the literature, there can be many types of innovation in agricultural areas. According to De Propris (2002) innovation can be divided into two types: product and process innovation. Furthermore, innovations can be classified as incremental innovation, innovations that refer to small changes to the product or process, or radical innovation, innovations that are new to the region.

Product innovation: in case of product innovation in the region of Baubau, the amount of product innovations can be considered as low. Especially, for low skilled and illiterate cultivators it is 'impossible' to invent new types of crops or varieties of seaweed. Although, different types of seaweed are used in order to meet the demand from the traders, there are no new products invented in the region.[15]

On a national level, on the other hand, many product innovations have been done. These product innovations do not refer to the invention of new crops, but to the invention of new applications of the seaweed. For example, seaweed is not exclusively used as a consumption product, but is also used as a thickener in the processing industry. Another example is Carrageenan, a substance that is extracted from seaweed and used in the pharmaceutical industry and the nutrition industry. In addition, seaweed can be used as a commodity for bio fuel as well.[15]

To find these applications of seaweed, the BPPT initiates research in order to find a new technology to make different types of thickeners. Other seaweed producing countries, for instance the Philippines, have approximately 150 types of thickeners extracted from different types of seaweed. Indonesia has, currently, roughly 50 types of these products.[15]

Process innovation: several institutions and research agencies on a national level are investigating new technologies, applications and techniques. The national BPPT is researching new techniques of processing seaweed and cultivating seaweed. Furthermore, the BPPT tries to investigate which

[14] Interview Mr. Arfa, head of ASSPERLI

[15] Interview mr Anggadiredja, BPPT

environmental conditions are most suitable for growing seaweed efficiently and which technique fits best to the circumstances.

However, since these techniques are very complicated for the illiterate farmers, it is hardly surprising that the cultivators need training in order to implement these changes. Trainers that are facilitated by the local government are able to teach the farmers the new techniques. Nevertheless, the government has to take into account that the cultivators are quite traditional. To teach the farmers such complicated techniques, the farmers should be guided by a step by step program and it has to that the farmers understand what the purpose is of taking these steps. These trainings and new techniques are also used by the informal cooperative. This cooperative trains their members in using these techniques and sometimes hire external trainers to assist them.[16] [17]

Another process innovation are the drying machines that are installed by the local government. These machines are used for drying the raw seaweed crops. The machines are operated by the cultivators and should make the drying process more efficient. Naturally, the cultivators dry their harvest by spreading the seaweed out where it is dried by the sun. These old-fashioned way of drying seaweed is out-dated by the drying machines. The reality, however, shows that the farmers do not use the drying machines very often. They claim that the machine does not add value to the process[18] [16].

However, in the informal cooperatives the machinery is used frequently and efficiently. The participants of this informal cooperative are able to assist other cultivators by operating machinery. The head of the informal cooperatives claims that the knowledge and experience that the members possess is transferred to others successfully.

Local cultivators do have a significant influence on innovation by accepting or declining them. For example, in some areas, for instance in Wakatobi, the local government, NGOs, and other actors strove to get a small seaweed processing company to the area. By involving the processing industry, the initiators hoped that the region was able to make a few steps in the vertical integration process. In other words, the seaweed cultivators should be able to benefit, since the influencing (local and regional) traders are not involved anymore. Despite the effort the processing is not, yet, involved since cultivators are not supporting the new factory. The cultivators claim that local traders and transporters will lose their income by leaving the transportation to the factory.

[16] Interview Mr. La Mane, NGO
[17] Interview Mr. Anggadiredja, BPPT
[18] Interview Mr. Arif and Mr. Mail, seaweed cultivators

To conclude, innovations are more or less placed into the region of Baubau. In addition, the product innovation and process innovation takes place on a national level and are implemented in the developing region and can therefore not considered as regional innovations. Besides, the success of the innovations that are initiated by institutions can depend on the acceptance of the local seaweed cultivators.

6.4 Basis for innovation on a regional level

Although, the inventions in this region are little and innovations are implemented on a small scale, it is important to assess whether there is a basis that supports regional innovation. The supporting institutions are distinguished on a local and a national level, so a distinction can be made among innovation support top down and bottom up. Furthermore, also the support, the capability, and suitability of the different types of collaboration will be assessed.

6.4.1 Collaboration, institutions and innovation management

To assess whether innovations on a regional level are supported by the institutions there is an overview provided that include the regional and national institutions that influence the innovative capacity.

Figure 8: Results of institutional support for regional innovation

Organization	**Description**	**Main support functions**
Local institutions		
Bappeda	Local governmental department for planning and infrastructure	D
Marine and fishery department	Local governmental department that focuses on the development of regional aquaculture, fishery and the citizens in this sector	D, C, T, F
Kooperasi department	Local governmental department to support cooperations in the region in several ways	D, T, C
Kooperasi	Governmental organization that support cultivators in their day-to-day activities	D, C, T, F, B
Core Map	NGO that protects the coral and quality of sea water in the region	D, T
National institutions		
Assperli	Seaweed cultivator association, represents the cultivators in the	D, C, T, B

	entire country	
BPPT	Agency for assessment and application of technology	T, R, C
Arli	Seaweed producers association, represents the processing organizations	R
IFI	Scientist association that researches the chemical applications of seaweed	R
Indonesian Seaweed Society	Association that supports and represents the seaweed industry of Indonesia	D, R

Legend: *D = Diffusion of information, C = competence building, R = R&D support*
T = technical advice, F = financial support, B = business services

The Bappeda is the department for planning and infrastructure. Besides the infrastructural facilities that this institution provides, the main support function that the Bappeda provides is the sharing of information with the cultivators. The officials of Bappeda inform the cultivators mainly on general policies and infrastructure projects, however, any specific information about cultivation is not provided.
The marine and fishery department is the department that is directly involved in the cultivation of seaweed in the entire area. Besides the specific information the department diffuses among the cultivators, it is also concerned with training the cultivators. The training concerns how the cultivators should run their business and how they can cooperate with each other. Furthermore, the department claims that in every cultivation area there are several trainers to assist the cultivators with technical advice about cultivation methods, using fertilizers, and avoiding diseases in the seaweed.

Kooperasi and Kooperasi department is a local system where, for instance, the cultivators can join to be supported by the local government. When cultivators have problems or questions, these can be asked at the kooperasi. Furthermore, the kooperasi provides technical advice to the cultivators about using fertilizers, diseases, and cultivations techniques. Also, the cultivators can obtain funds at the kooperasi if they are registered. Note that this is the main reason that seaweed cultivators have themselves registered.

Core Map is an NGO that is active on the islands of Wakatobi, the hinterland of the city of Baubau. This NGO is one of the NGOs that try to support the developing regions. This specific NGO aims to protect the coral in the Wakatobi area. The protection of coral also concerns the seaweed cultivators since cultivation can be very harmful to the coral. Therefore, the NGO provides the cultivators with advice

about different cultivation methods. Furthermore, the villagers have to grasp the fact that coral is a unique natural asset that can attract tourists to the region.
Beside the technical advice, Core Map forms groups that share a micro financing system. The idea is simple: individual group members pay a monthly fee that is saved by the treasurer. In case one of the members needs the cash, the group decides whether it is provided to the applicant.

On a national level there are several institutions that provide support to innovations on a regional level. One of them is ASSPERLI. This institution is the farmer association and, therefore, represents all the cultivators in the seaweed industry. Naturally, this only concerns the farmers that became member of this association. The local government also has a significant task in this process, since they have to contact the association and have to facilitate a branch office in the local area. The main task of the association to support innovation is providing specific information about new techniques and technologies that can be used for cultivating, harvesting, drying or protecting the seaweed.

Another institution is the BPPT, Badan Pengkajian dan Penerapan Teknologi, that assesses technology and is trying to apply useful technologies to the industry. This institution facilitates research for seaweed cultivation techniques and the application of seaweed and chemicals that are retrieved from the crops. Besides that, the BPPT supports trainers in the field to assist and support the cultivators. The trainers have to transfer the knowledge and the techniques to the individual seaweed farmers. Moreover, when new techniques or technologies are implemented, the trainers have to transfer the knowledge and train the skills to the individuals.

The Arli is the producers association in Indonesia. The processing industry of Indonesia is or can be a member of this association. This institution supports innovation by supporting research to improve the seaweed industry. In collaboration with BPPT, IFI, and the Indonesian Seaweed Society, they fund and execute research to improve the cultivation, trading, processing, and application of seaweed.
The IFI is the association of scientists that are involved in research for the seaweed industry. The researchers of IFI are, specifically, involved in investigating new application for chemicals that can be extracted from seaweed. These applications are needed to compete with international competitors as the Philippines.
Finally, the Indonesian Seaweed Society is the association that represents the seaweed industry. It represents the interests of the complete industry to stimulate the national government and investors to

provide additional funds for the improvement of the seaweed sector. Besides, the Indonesian Seaweed Society provides information to every actor in the industry by organizing seminars, meetings, and discussions. Furthermore, the association also stimulates research for new inventions in the seaweed sector. However, the Indonesian Seaweed Society do not carry out these investigations themselves, but assign researches to institutions such as BPPT and IFI.

Conclusion

Based on the evaluation of the institutions, the conclusion can be drawn that the support for innovations should be, theoretically, good. There are many institutions concerned with all the aspects and support functions that have to be covered. However, there is a lack of financial support, especially on a local level. An institution like the department of marine and fishery affairs does support the cultivators with financial support, but it is quite hard to obtain these funds. Furthermore, NGOs such as Core Map do provide financial advice and structure a system were the cultivators save money for hard times.

In other words, the national and, therefore, the down policies should be perfectly stimulated and translated to local policies. The knowledge, technologies, and financial support from a national level should be combined with the local specific information. So, if the knowledge and invented skills are used properly and trained to the locals properly it is possible to obtain a regional innovational system.

6.4.2 Influence of collaboration on innovation

A distinction is already made among the four different 'levels of intensity' of collaboration. The informal forms are initiated by the cultivators and the formal forms, on the other hand, are initiated by the government. Figure 10 shows the results that are derived from the interviews, and the observations, with several interviewees.

It has to be addressed that the motivation for cultivators in general is not to become more innovative, however, by participating in one of the four different collaborations the innovative capacity of the cultivator can increase.

	Informal collaboration	formal collaboration	informal cooperative	formal cooperative
Formation (external):				
Knowledge sharing	x	x	x	x
Decreased development time and cost			x	x
Flexibility	x		x	
Technological complementarity		x	x	x
Inimatibility	na	na	na	na
Meeting new market demands	x	x	x	x
Overcoming vulnerable strategic position		x	x	x
Strengthening own brand	na	na	na	na
Formation (internal):				
Strong social position			x	
Risks:				
Lack of control				x
Opportunistic behaviour by partner				
Gaining a competitor				
Success:				
Communication	x	x	x	x
Commitment			x	
Trust	x	x	x	x
Partners, complementary resources		x	x	x
Previous experience	na	na	na	na
Joint teams			x	x

na = not applicable

Figure 9: Results influence collaboration on innovation

Formation: the most interesting motivations to participate in a collaborative relationship that will be discussed are technological complementarity, overcoming vulnerable strategic position, and strong social position. First, the technological complementarity is a motivation to join the 'formal collaboration' and 'formal cooperative'. These are supported by the government and offer machinery, seeds, fertilizers, and pesticide to complement the cultivators in their daily operations. Besides, the technical and product complements are the reasons for individual cultivators to join the 'informal cooperative' as well. Second, by participating 'a cooperative' the cultivators can overcome a vulnerable strategic position. In a developing region, such as Baubau, the support of a cooperative can assist in financial issues, cultivation issues, and market issues. Therefore, the survival of the individual cultivators' enterprise can be harmed. Third, one of the main reasons for individual cultivators join the 'informal cooperative' is to increase their 'social position'. For the participating cultivators it is quite important to join this cooperative, since it is providing the cultivators a certain status and relationships and, therefore, the cultivators are very committed to this cooperative.

Risks

The risk that the individual cultivator loses control is high, since individual cultivators, merely in case of the 'formal cooperative', have to renounce their autonomy. Cultivators have to obey the orders that are made by the joint team of the 'formal cooperative'.

Success

As already mentioned, the commitment of cultivators to the 'informal cooperative' is high. In contrast, the cultivators do not have any commitment to the other collaborations. This results in a passive attitude of the participating cultivators, which is a negative influence on sharing ideas, knowledge and inventions. The communication in the 'formal' collaborations can be classified as a one-way street. The trainer or representative of the local government shares valuable information, knowledge and techniques with the cultivators. However, the cultivators share little if any information to the 'formal' collaborations.

Despite the lack of commitment, the individual cultivators do trust the local government and the other cultivators involved in the collaboration. In general, the trust and confidence that people have in their fellow villagers is high. As stated before, the people in these developing regions will not enrich themselves at the cost of other villagers. The trust in the joint teams of the 'informal cooperative' is, however, higher than in the 'formal' collaborations. The main reason is that the seaweed cultivators are convinced that the local government can support them in a better manner than they currently do.

Conclusion

Despite the small number of inventions and innovations that have occurred in this region, can be concluded that there is a certain base in collaborations for innovations in this region. Especially, the 'informal cooperative' is a good base for innovations. Although, the motivations to participate in a cooperative are mainly to obtain support for their own small enterprise, the success factors to create 'a collaboration' that can stimulate innovation, is provided. The strong social position that is achieved and the commitment, trust, and the active entrepreneurial attitude that results from joining the 'informal cooperative', can provide the necessary input for innovations.

7. Conclusion and discussion

In this chapter the main research question will be answered. The research question is: *What is the impact of collaborations, collaborative strategy and institutional interference on sustainable competitive development of innovation in a developing region?*

7.1 Conclusion

In a developing region, a distinction can be made among four different forms of collaboration. These forms differ from each other on two dimensions: intensity level and formalization. In addition, an important aspect is the initiator of the collaboration. On the one hand, this can be an individual cultivator or a group of cultivators. On the other hand, the collaboration can be initiated by an institution, in most cases the local government. First, the collaboration among two individual cultivators can be classified as 'informal collaboration'. This means that the cultivators do collaborate, however, there are no formal or legal strings attached. In most cases, the cultivators share information and discuss problems they face in cultivating or harvesting the crops. Second, collaboration between cultivators that is initiated by the government or other institutions, can be classified as 'formal collaboration'. Third, the cooperative that is initiated by cultivators and where a certain commitment and active attitude of the participating cultivators is expected, is classified as 'informal cooperative'. This form of collaboration is more formalized and concerns a longer time span than the 'informal collaboration'. Finally, the fourth form that can be recognized is the 'formal cooperative'. The cooperative is a formalized system that is initiated by the local government.

Formal collaboration has some benefits such as a structured and government controlled sector, that can result in a more efficient and effective allocation of resources, training, and capital. However, the downside is that the cultivators are not motivated to actively interact with the formal cooperative. In addition, the motivation to become a member is, in many cases, based on financial reasons and is, therefore, an easy way to get access to funds.

The sustainable economic growth and more specifically, the innovation that takes place in the region is small. The innovations that take place are often process innovations that can be qualified as radical changes, since it has a huge impact on the local seaweed sector. The implementation of new machines for cultivation, instead of processing the seaweed by hand, can be considered as one of these radical innovation. Besides, the cultivation techniques are also influenced by new inventions, more specifically

by the research of national research agencies, that are implemented and are, therefore, new to the region.
On the other hand, product innovation is difficult since it is hard to invent new types of crops in aquaculture. Some new applications however, are invented for seaweed or extractions from seaweed. Although, these applications are invented by national institutions and do not have any relation with regional development.

The innovation policy that would result in the highest economic growth would be a 'pluriform' policy on innovation. This policy consists of both a bottom-up and a top-down innovation policy. This is stated by Howells (2005) and makes sense, since the national policy needs a regional dimension to adapt the national innovation policy to the specific regional conditions, in order to gain the highest economic growth on a regional and on a national level. Besides this top-down policy, a bottom-up policy also has to be implemented, since it is vital for the region to be actively involved in the innovation process. The search for opportunities that can affect the innovative capacity of the region and the inventions itself could be a regional contribution. So, the 'best practice' that is based on the national policy and the 'bespoke' methods that are regionally focused should be combined to attain the best results.

To answer the research question, it can be concluded that the impact of institutional interference and collaborations on innovation in this specific region is significant. Although, in the region just a limited number of innovations took place, there is a basis for innovation based on both institutional and 'cooperative support'; the models that are used to assess the support functions in this regions. The institutional support in this respect, is quite good on a national level. All the support functions that are recognized by scholars are fully covered by different institutions. On a regional level these national institutions can also support the region to become innovative. Although, it has to be addressed that on both national level and regional level there is a lack of financial support. This can possibly lead to the invention of new and potentially qualitative ideas that, due to a lack of funds, are not able to be executed. It, obviously is an important task of the national government to create a system that is capable of developing and supporting the regional initiatives. Likely, the national government will benefit from these regional initiatives since this can result in a national competitive advantage to other seaweed industries, such as the Philippines.
In addition, although the individual cultivators participate for other reasons than increasing their innovative capacity, the success factors for collaborative support and stimulation of innovation are

available in the region. The 'informal cooperative' is able to provide a platform with proactive, entrepreneurial, and committed cultivators that can combine their competences, knowledge, and ideas to become an endogenous growth factor to this region.

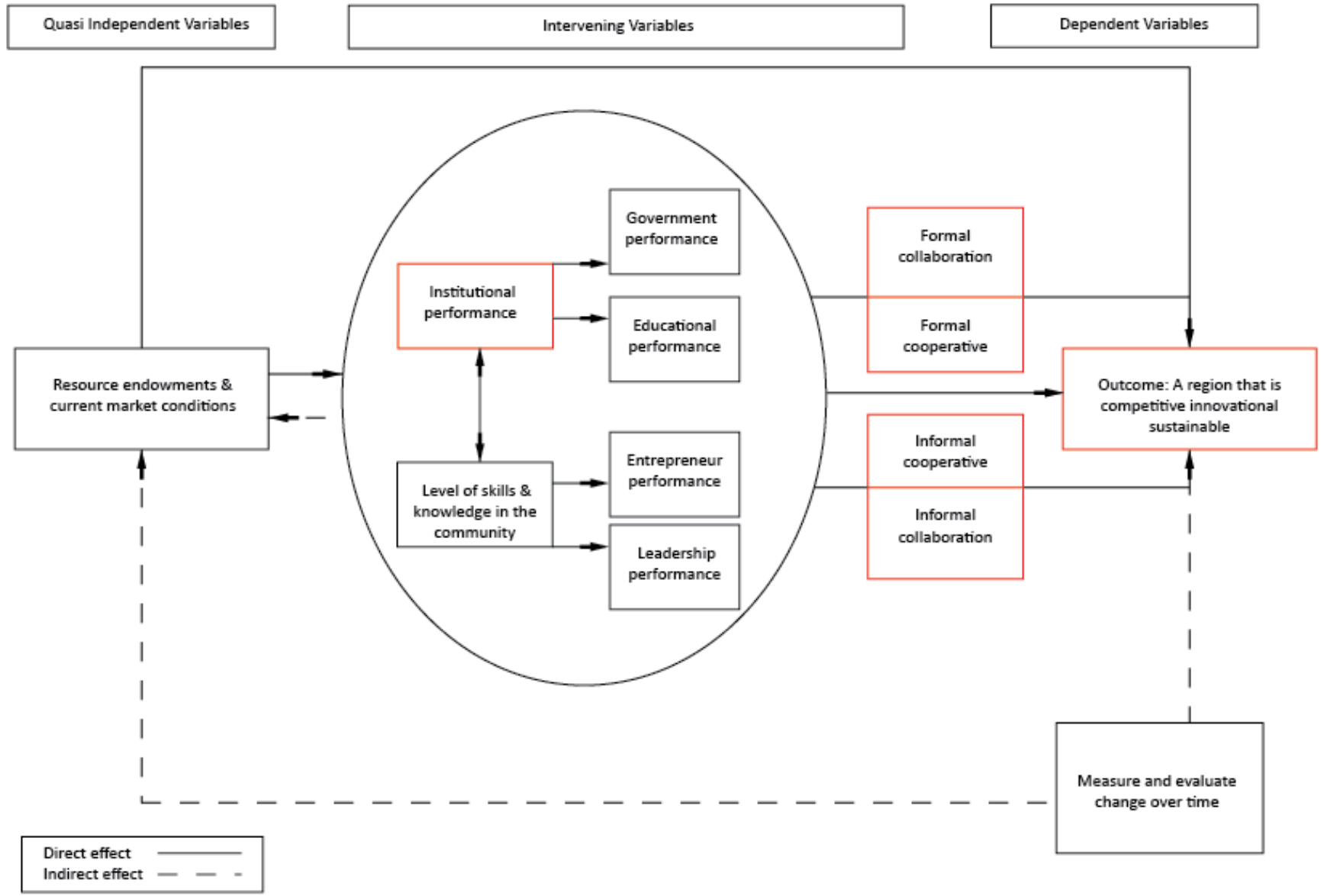
7.1.1 Explaining the modified model

The model of Vredegoor (2011) explains the need for cooperatives in the model to influence the competitive entrepreneurial outcome of the model. However, it has to be addressed that an additional distinction has to be made among the existence of 'formal cooperatives' and 'informal cooperatives'.

The influence of these types of cooperatives is different. The 'formal cooperative' has a more neutral or slightly positive influence on the entrepreneurial and innovative outcome of the model. Many cultivators participate in this type of cooperative to obtain better access to funds, support of institutions in knowledge, techniques and tools. On the other hand, cultivators that did not participate have limited access to funds provided by government banks.

On the contrary, the 'informal cooperative' has a more positive influence as shown in figure 10. In this type of collaboration the cultivators are stimulated to get actively involved in the cooperation. Since these cooperatives are quite successful, it is an example for other farmers, regions, and even local governments. The farmers involved in these cooperatives can be qualified as very active, entrepreneurial and committed. Therefore, this cooperative has a positive influence on innovation. In other words, the cultivators that participate in this type of cooperative will, or are able to, use the platform for stimulating innovation and are, therefore, an endogenous factor that can support the innovative capacity of the entire region.

Figure 10: Modified model of endogenouos growth in a developing region



7.2 Discussion

The previous chapter concluded that there is a basis for innovation in the region of Baubau. However, this is based on two influencing factors: institutional support and collaborative results for product development. Theory shows that creative ideas have to stem from within the region and do not necessary need the support from institutions. Besides, the collaboration initiatives that combine and support knowledge sharing and other beneficial support for innovation, still need creative ideas that starts the invention.

Since the cultivators highly depend on institutional initiatives and institutional financial support, the expected development is that the inhabitants, and especially the low skilled and low educated cultivators, do not have the ability to become very innovative in the near future. The near future will probably/most likely show that the innovations that have been done in this region are invented somewhere else and implemented in the region of Baubau. Even though the application, technique or product will be new to the region, can the innovation really be attributed to the region of Baubau? When the region becomes more developed and the cultivators are more aware of the cultivation methods, products, and machines in other seaweed cultivation areas, the cultivators become more capable to see opportunities and utilize them accordingly. Besides, in other countries, like the Philippines, the cultivators can learn from the locals as well. The institutions on a local level should empower the local cultivators to make their own decisions and challenge them in learning and creating new things and show a more active and committed attitude to try to start innovations in the region.

In other words, the model of Stimson et al. (2009) is focused on the endogenous growth stimulators in the region. This research, however, shows that this endogenous growth is unlikely since the region highly depends on the national institutions. Especially in case of innovation and innovation management, the region is not able to finance projects or set up the necessary research and development agencies.

7.2.1 Limitations & future research

Since there was one single example of formal collaboration that was started on the initiative of farmers in this region, the information is limited. The number of researched collaborations should be wider so the information that is retrieved can be considered as more reliable. Since the sample for this research is small, the generalizability is also low.

Even though it is hard to prepare the research in a developing region in another way, the reliability of this research could be improved by hiring an independent interpreter. Although the interpreters provided necessary and useful contacts, they might influence the objectivity of this research by

distorting information during the translation or by contacting subjective interviewees. Biased information was avoided by repeatedly asking question in different formulations and by increasing the pressure on the interpreter. Furthermore, an important problem that had to be tackled was the translation when collecting the data during the field trips. Although, the Indonesian interpreters were quite friendly and willing to help, the interpreters also represented the local government.

Some interpreters were hesitant in helping to interview the critical interviewees. Since the interpreters were members of the local government, they did not want to support criticism or be criticized by the interviewees. Before field trips and even during the interview sessions, there were intensive debates to convince the interpreters that it was vital for my research and would inherently result in enhancing the quality of this research.

Finally, this research is done from an economic perspective and is, therefore, limited. A more pluriform research would shed a different light on this region. For instance, a psychological point of view would provide a better insight in the motivation and results of individual cultivators and the impact on innovation.

Recommendations for further research

In executing this research it appeared that clustering was addressed in several academic articles. Clustering could be researched in the seaweed industry of Indonesia as well. The question that could be raised is if there are national clustering strategies and how this affects the regional economic development.

Another interesting topic that should be elaborately discussed is micro financing. Interesting topic to discuss is how micro finance can stimulate innovation in this region. An example of an interesting research question would be: is there a basis for a national micro financing system and how does such system affect the regional development?

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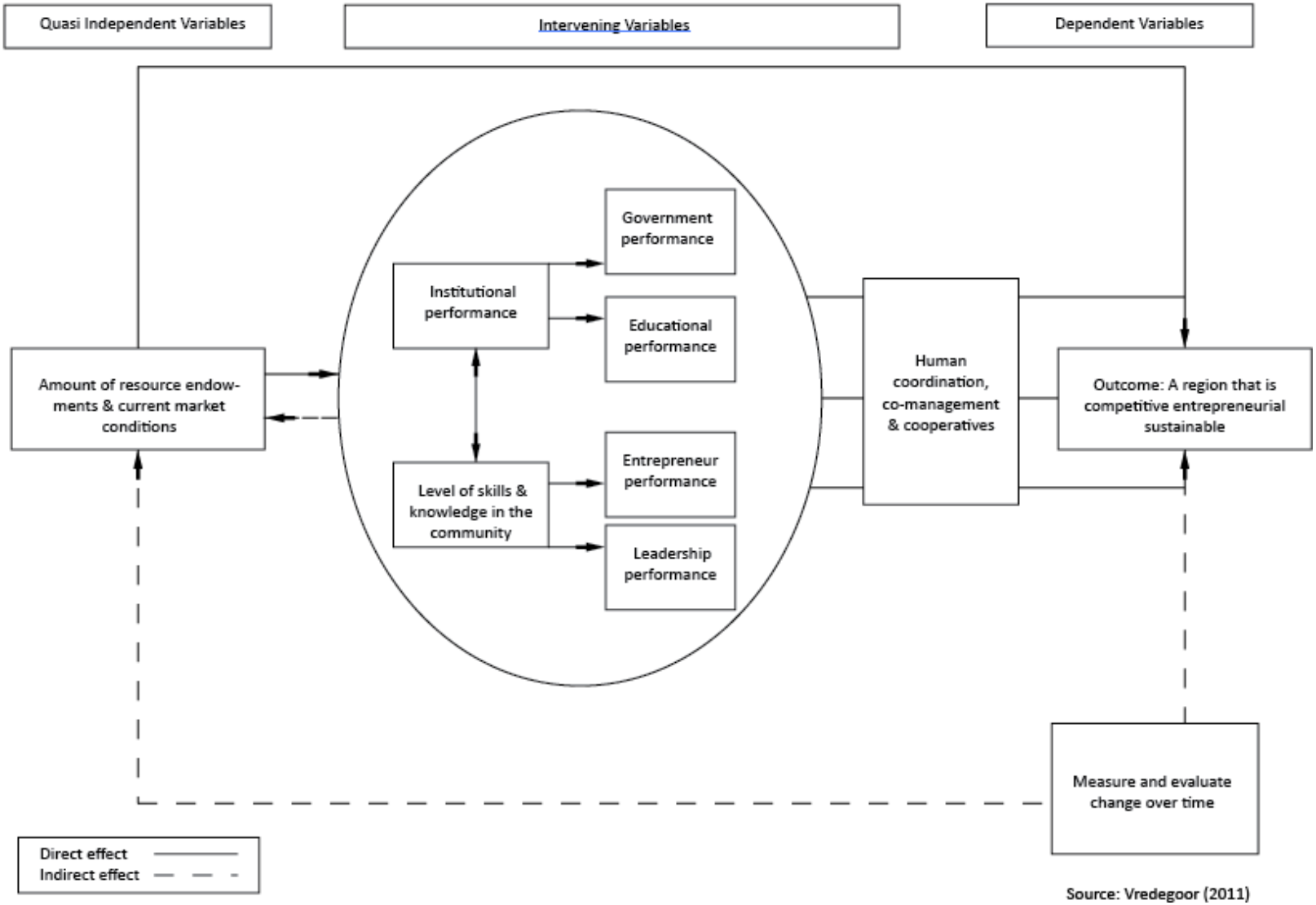
Appendix A



Source: Vredegoor (2011)

Appendix B

List of theoretical concepts of interorganizational relations

1. **Hierarchical relations:** through acquisition or merger, one firm takes full control of another's assets and coordinates actions by the ownership rights mechanism.

2. **Joint ventures:** two or more firms create a jointly owned legal organization that serves a limited purpose for its parents, such as R&D or marketing.

3. **Equity investments:** a majority or minority equity holding by one firm through a direct stock purchase of shares in another firm.

4. **Cooperatives:** a coalition of small enterprises that combine, coordinate, and manage their collective resources.

5. **R&D consortia:** inter-firm agreements for research and development collaboration, typically formed in fast-changing technological fields.

6. **Strategic cooperative agreements:** contractual business networks based on joint multi-party strategic control, with the partners collaborating over key strategic decisions and sharing responsibilities for performance outcomes.

7. **Cartels:** large corporations collude to constrain competition by cooperatively controlling production and/or prices within a specific industry.

8. **Franchising:** a franchiser grants a franchisee the use of a brand-name identity within a geographic area, but retains control over pricing, marketing, and standardized service norms.

9. **Licensing:** one company grants another the right to use patented technologies or production processes in return for royalties and fees.

10. **Subcontractor networks**: inter-linked firms where a subcontractor negotiates its suppliers' long-term prices, production runs, and delivery schedules.

11. **Industry standards groups:** committees that seek the member organizations' agreements on the adoption of technical standards for manufacturing and trade.

12. **Action sets:** short-lived organizational coalitions whose members coordinate their lobbying efforts to influence public policy making.

13. **Market relations:** arm's-length transactions between organizations coordinated only through the price mechanism.

Source: Todeva and Knoke, 2005