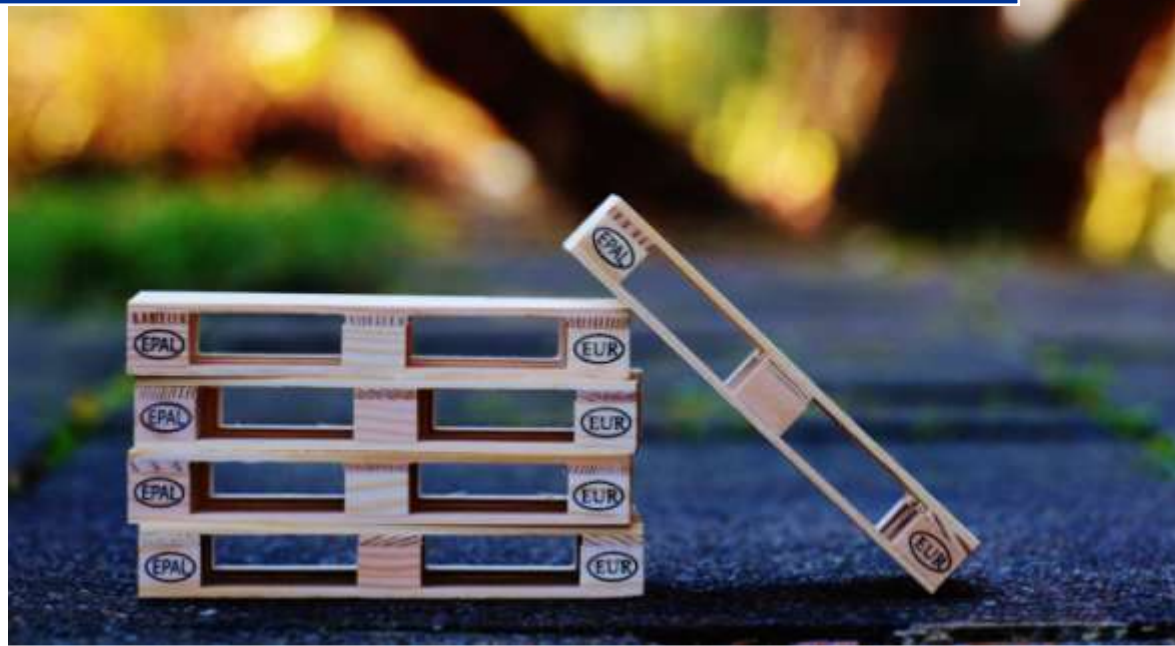INNOGROW
Interreg Europe

A1.4 "Survey methodology to map the factors that influence rural economy SMEs to invest in new technologies and get involved in new collaborative models & corresponding dataset"

CoC - Molise

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1 Introduction

The "Regional policies for innovation driven competitiveness and growth of rural SMEs – INNOGROW" is an Interreg Europe project aiming to improve partners' policies on rural economy SMEs competitiveness regarding the integration of new production technologies and business models that lead to innovative products. The project will promote the adoption of innovation by rural economy SMEs, through sharing practices / experiences between regions and actors relevant to rural economy SMEs competitiveness, and integrating lessons learnt into regional policies and action plans.

This document is an output of the Interreg Europe INNOGROW project and constitutes the first part of Activity 1.4 "Investigating the factors that influence rural economy SMEs to adopt innovation", which aims to develop an analysis report on the barriers and enablers that affect rural economy SMEs' investments in new technologies & involvement in innovative collaborative networks and models.

The main purpose of this report is to provide project partners with a survey methodology to map the factors that influence rural economy SMEs to invest in research and innovation, enabling partners to realise the policy obstacles concerned.

In particular, the methodology report provides the tools and guidelines to identify, evaluate and gather the input necessary to investigate the factors (such as regulatory framework, financial capacity, market structure) that influence the adoption and implementation of innovation strategies in rural economy SMEs.

The methodology will define the research questions, objectives and policy purposes of the analysis, and will include the methodological tools and techniques to be employed for data collection and processing. The methodology will also set the quality specifications (criteria) to ensure that partners will gather the input most relevant for the development of the study.

The report is outlined as follows: section 2 provides information about the context of the project and the interdependencies of the particular activity with other INNOGROW activities; section 3 provides working definitions for the terms, "rural economy SMEs", "technological innovation and "innovative collaborative networks"; section 4 presents the results of a preliminary desk research, highlighting the importance of analysing factors to the adoption of innovation; and section 5

describes the overall methodology approach, defining the research questions and providing the tools and techniques to be employed for data collection. Finally, section 6 presents a roadmap for the administration and implementation of the INNOGROW Activity A1.4.

2 Context of the INNOGROW project

2.1 Background of the INTERREG Europe Programme

The INTERREG EUROPE programme (www.interregeurope.eu) promotes the exchange of experience on thematic objectives among partners throughout the European Union (EU) on the identification and dissemination of good practices, to be transferred principally to operational programmes under the Investment for Growth and Jobs goal, but also, where relevant, to programmes under the European Territorial Cooperation (ETC) goal. This will be done via the support and facilitation of policy learning, sharing of knowledge, and transfer of good practices between regional and local authorities and other actors of regional relevance.

INTERREG EUROPE is one of the instruments for the implementation of the EU's cohesion policy. With this policy, the EU pursues harmonious development across the Union by strengthening its economic, social and territorial cohesion to stimulate growth in the EU regions and Member States. The policy aims to reduce existing disparities between EU regions in terms of their economic and social development and environmental sustainability, taking into account their specific territorial features and opportunities. For the 2014-2020 funding period, cohesion policy concentrates on supporting the goals of the Europe 2020 strategy, which targets to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion.

2.2 The INNOGROW project

European regions have an essential role to play in shaping and implementing policies for economic development. The economic and environmental challenges faced by rural economy SMEs are the ones INNOGROW partners focus on, and address with improved policies. Research results and the European Commission agree on the necessity to foster innovation adoption by rural economy SMEs, with the purpose to increase their productivity, competitiveness and internationalisation. The INNOGROW project idea has thus been developed to address these challenges through interregional cooperation, exchange and valorisation of good practices of regions, with the aim to influence

policies both at regional and national level for improving the competitiveness of rural economy SMEs.

The "Regional policies for innovation driven competitiveness and growth of rural SMEs – INNOGROW" project aims to improve partners' policies on rural economy SMEs competitiveness regarding the integration of new production technologies and business models that lead to innovative products. The project will promote the adoption of innovation by rural economy SMEs, through sharing practices / experiences between regions and actors relevant to rural economy SMEs competitiveness and integrating lessons learnt into regional policies and action plans.

Rural economy SMEs need to remain globally competitive by adopting innovative solutions, new business models and modernisation approaches that will lead to increases in productivity and access to new markets. Territorial capacity building and policy innovation involving all regional actors are critical factors for promoting the diffusion of innovations, to maintain and strengthen SMEs' competiveness and consequently regions' growth. Regions in rural areas can play an important role in the modernisation of existing SMEs and the proliferation of innovative start-ups, providing incentives to promote the adoption of technological innovations, such as organic farming, functional food, crop resistance systems, selective breeding and feeding processes to boost livestock resistance to local conditions. At the management level, incentives need to be provided for mixed production of crops and livestock products, and new business models and coalitions that lead to innovative business ideas.

2.3 INNOGROW Activity A1.4

The INNOGROW Activity A1.4 "Investigating the factors that influence rural economy SMEs to adopt innovation" includes the implementation of a survey with stakeholders in INNOGROW regions to analyse the barriers and enablers that affect rural SMEs' investments in innovative technologies and involvement in collaborative innovation networks and models.

Based on a survey methodology, the project partners will be able gather, prepare, synthesise and provide input on the factors that influence rural economy SMEs to adopt innovation. All partners (excluding UNEW) will promote the survey in their region to gather data and evidence.

The analysis of the evidence collected will result in an analysis report, presenting the barriers and enablers that affect rural economy SMEs' investments in innovative technologies and involvement in innovative collaborative networks and models. The report will offer an overview that will enable policy makers to understand the inhibitors and the policy obstacles related to innovation adoption by SMEs, and improve the management and implementation processes of own policy instruments.

2.4 Linkages with other INNOGROW activities

The results of activity A1.4 will provide input and support the implementation of the forthcoming workshop on new business models for rural economy SMEs (Activity A3.2), the public consultation meetings (Activity A2.2), the workshop on stimulating innovative products development (Activity A3.3), the study visits to transfer experiences on innovative production processes (Activity A3.4), the policy briefs to be developed in the second semester (A4.2) and the partners' action plans (A5.1), where relevant.

A2.2: Public Consultation Meetings	A3.2: Interregional workshop on supporting new business models for rural economy SMEs	A3.3: Interregional workshop on stimulating innovative products development

A1.4: Report on the factors that influence rural SMES to adopt innovation

A3.4: Study visits to transfer experiences on innovative production processes	A4.2: Forming policy briefs & participating in the policy learning platform	A5.1: Joint development of action plans

3 Key concepts and definitions

3.1 Rural economy SMEs

Small and medium-sized enterprises (SMEs) are considered the backbone of Europe's economy as they represent 99% of all businesses across the EU. In the past five years, SMEs have created around 85% of new jobs and provided two-thirds of the total private sector employment in the Union. The European Commission considers SMEs and entrepreneurship as key to ensuring economic growth, innovation, job creation, and social integration in the EU.

Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361. The main factors determining whether an enterprise is an SME are a) the staff headcount and b) either the turnover or balance sheet total. According to the European Commission (EC), the category of small and medium-sized enterprises (SMEs) is made up of enterprises, which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million. Within the SME division, a small enterprise is defined as an enterprise, which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million.

Company category	Staff headcount	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

The term "rural economy SMEs" refers to small and medium businesses, which operate in rural areas and contribute to the GDP of rural areas, connected with rural-specific activities and make use of natural capital / rural environment. According to EU Urban-Rural Typology[1], a NUT3 region is classified as "Predominantly rural", if the share of population living in rural areas is higher than 50% and the region does not contain an urban centre of more than 200.000 inhabitants representing at least 25% of the regional population. For the purposes of the INNOGROW project,

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[1] http://ec.europa.eu/eurostat/statistics-explained/index.php/Urban-rural_typology

the definition of "rural economy SMEs" will remain as broad as possible so that the project consortium can have more opportunities to discover and exchange best practices that will facilitate regional authorities to implement policies for promoting the adoption of technology and business model innovations by SMEs in rural areas. Therefore, rural economy SMEs may comprise businesses driven by or based on natural capital or environment. This includes farming and forestry but also tourism, leisure, food (where linked to particular forms of natural capital or the environment, e.g. farm tourism, walking holidays) and/or activities of entrepreneurs locate in rural areas for quality of life. The following categories of activities are considered relevant in the INNOGROW context.

Table 1: Categories of rural-specific activities

CATEGORIES OF RURAL-SPECIFIC ACTIVITIES
1. AGRICULTURE, FORESTRY, ANIMAL HUSBANDRY AND FISHING
2. MANUFACTURING - Manufacture of food products - Manufacture of beverages - Manufacture of tobacco products
3. ACCOMMODATION AND FOOD SERVICE ACTIVITIES (AGRO-TOURISM) - Accommodation - Food and beverage service activities - Tourism-oriented transportation
4. ENERGY AND RESOURCES
5. OTHER SECTORS/INDUSTRIES RELATED TO RURAL SPECIFIC ACTIVITIES

3.2 Technological innovation

Innovation comprises new technologies, but also new processes, products, markets, services, behaviours, and networks. Innovation can be R&D-based but also driven from within firms and communities. According to the unified theory of acceptance and use of technology (UTAUT)[2], every technology involves socio-technical innovation. The theory holds that there are four key constructs related to technology adoption: a) performance expectancy, b) effort expectancy, c) social influence, and d) facilitating conditions. The first three are direct determinants of technology usage intention, and the fourth is a direct determinant of technology use behaviour.

In addition to the above, take up of technology is affected by the design of that technology (e.g. open innovation), by regulatory and institutional conditions, skills and knowledge to put it into practice, the operation of social learning between firms, the effectiveness of advisory and technical assistance, the underlying aspirations, values and preferences of the business owners. Furthermore, according to the Conceptual Framework for Drivers of Economic Growth[3], factors such as physical capital, human capital, competitiveness, investments in infrastructure and innovation, business and sector profile are drivers that can result in increased productivity per worker and increased employment; factors that must be considered in our analysis.

Therefore, technologies must be adapted to local social, environmental and economic contexts. It is important to understand the potential of new technologies on the productivity and competitiveness of rural economy SMEs, taking into account local drivers, opportunities and barriers to rural economy SMEs and economic growth within rural places.

In the context of the INNOGROW project, technology innovation refers to the process through which new or improved technologies (e.g. organic farming, functional food, crop resistance system, selective breeding) are developed and brought into widespread use to help SMEs reduce costs, adopt more efficient development processes and bring products to market more quickly than in the past.

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[2] Michael D Williams, Nripendra P Rana, Yogesh K Dwivedi (2015) "The unified theory of acceptance and use of technology (UTAUT): a literature review".
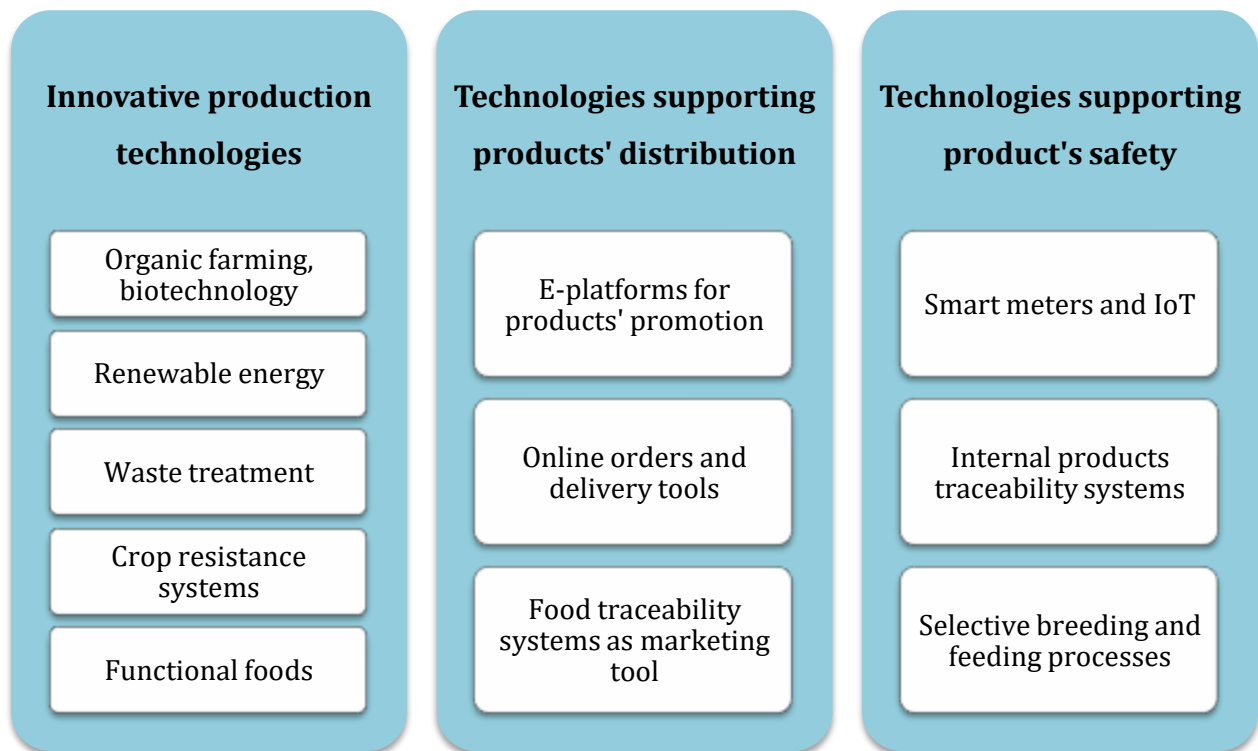[3] HM Treasury (2000), Productivity in the UK: The Evidence and the Government's Approach, HM Treasury, London.

The following sub-section provides a categorisation of new technologies useful for rural economy SMEs, as identified through a preliminary desk research, conducted for Activity A1.1.

New technologies for rural economy SMEs

Several types of new technologies have been adopted by SMEs to capture value from technological innovation and economies of scale, leading to increased competitiveness and productivity. As a part of an overall strategy, SMEs adopting new technologies aim to: a) increase their economic benefits, b) reduce environmental impact and c) survive in a competitive environment. The following is an indicative list of new technologies that are currently being used by SMEs in rural areas.

Table 2: Categories of new technologies (indicative list)

Innovative production technologies	Technologies supporting products' distribution	Technologies supporting product's safety
Organic farming, biotechnology	E-platforms for products' promotion	Smart meters and IoT
Renewable energy	Online orders and delivery tools	Internal products traceability systems
Waste treatment	Food traceability systems as marketing tool	Selective breeding and feeding processes
Crop resistance systems		
Functional foods		

3.3 Innovative collaborative networks

Innovative collaborative networks can be defined as groupings of independent undertakings (e.g. businesses, organisation, knowledge institutions, public administrations, individuals), operating in a particular sector or/and region and designed to stimulate innovative activity by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and by contributing effectively to technology transfer, networking and information dissemination (2006/C 323/01).

The collaborative approach to innovation involves strategic, managed exchanges of information with actors outside of the boundaries of an organisation, aimed at integrating their resources and knowledge into the organization's own innovative process (Coluccio and Russo-Spena, 2013).

SMEs need to develop and access different types of capabilities and resources to be able to stimulate innovation, fostering rapid growth and sustainable development. To address this challenge, SMEs get increasingly involved in different kinds of collaborative arrangements, with other companies and organisations (e.g. suppliers, research centres, universities, competitors), seeking to a) stimulate the creation of new knowledge, processes, products and services, b) be more effective at managing cost and risks, c) get access to key resources and d) manage their innovation and market growth processes to accelerate technology development.

The rationale is that the participation in collaborative innovation models/networks (open innovation) increases the chances to achieve better results in terms of productivity and innovation capacity, compared to the traditional approach to innovation, in which an organisation strives to generate the best ideas for product or technology development entirely by itself (internal R&D).

The main benefits created by participating in collaborative innovation schemes include: a) access to specialised knowledge and capacities, resulting in enhanced innovation performance and smart specialisation, b) better quality of products and services that deliver additional value for end-users and customers, c) reduced costs and risks associated with product development or/and service delivery, d) exploitation of new market opportunities, and e) improved absorptive capacity and innovation processes.

4 Factors that influence rural economy SMEs to adopt innovation

The innovation capacity of SMEs is critical to the competitiveness and growth of rural economies across the EU. Evidence suggests that SMEs in rural areas are innovating less than their urban counterparts – especially in non-technological areas, where they are more active and have less capital to do so[4]. The reluctance to explore new products and processes can hinder the diffusion of innovation, which is necessary to improve SMEs' competitiveness and foster sustainable development and growth.

The literature provides an extensive list of factors that influence the diffusion and adoption of innovation in SMEs. Nevertheless, the analysis of these determinants suggests that further research needs to be carried out to better understand the process of innovation and identify the barriers and enablers that influence SMEs to invest in new technologies and get involved in new collaborative networks and models.

A preliminary desk research[5] has indicated three categories of factors that can influence the adoption of innovation in rural economy SMEs: a) technological, b) organisational, and c) environmental factors.

The technological dimension includes a number of technological related factors (such as technology readiness, compatibility, and availability of existing technology and tools) that affect an organisation's decision to invest in new technologies or participate in a collaborative model. The organisational dimension describes the features of an organisation that might have a significant impact on the process of decision-making (towards an open innovation model) and relates directly to the availability and use of internal resources (such as financial capacity, human resources, and research capabilities); while the environmental factors relate to the market structure, regulatory framework and competition pressures, determining the environmental and background elements that might affect an organisation's intent to invest in innovation. All these factors are illustrated in the following table.

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[4] http://www.vitalruralarea.eu/search-by-keywords/39-sme-empowerment-and-enterpreneurship/projects-sme-empowerment/112-stimulating-innovation-and-business-growth-in-rural-smes-uk

[5] Preliminary desk research took place during the development of the present methodology report. Evidence was retrieved from relevant secondary sources of information such as academic publications, journal articles and business reports.

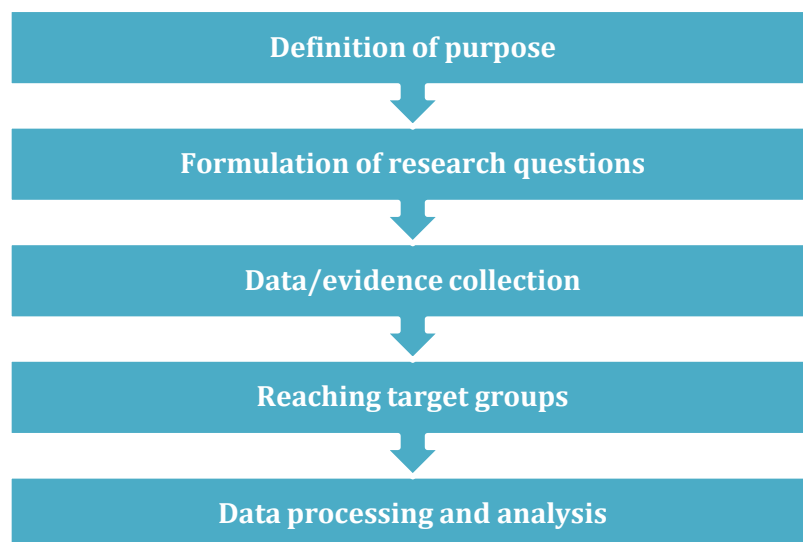| CATEGORIES OF FACTORS THAT INFLUENCE THE ADOPTION OF INNOVATION |
| --- |
| **A. TECHNOLOGICAL FACTORS**

o Compatibility (Integration of innovations into existing processes)
o Technological readiness (Availability or adequacy of existing technology/tools)
o Cost to setup and maintain new technological infrastructures (if required) |
| **B. ORGANISATIONAL FACTORS**

o Perceived value or relevance to the business (these factors refer to the anticipated benefits if an organisation decides to invest in innovation)
o Financial capacity (own financial resources or ease in accessing financing/funding for innovation projects)
o Availability of managerial skills for innovation, intellectual property and knowledge processes
o Internal research and technology capabilities
o Willingness to adopt new technologies or participate in innovative collaborative networks (resistance to change)
o Networking and cooperation with innovation stakeholders
o Availability of technical staff with relevant technological skills
o Prior experience with new technology implementation |
| **C. ENVIRONMENTAL FACTORS**

o Regulatory framework (e.g. provision of incentives for innovation)
o Market structure and competition pressures
o Availability of external support (technology vendors)
o Cultural and traditional issues (in case of small, rural communities, there may be a negative attitude towards technologies and innovation)
o Readiness of partners (e.g. suppliers, intermediaries) across the (food) supply chain |

5 Survey methodology approach

The methodology will structure, orientate and guide the collection of evidence on the factors that influence rural economy SMEs to adopt innovation, leading to the development of an analysis report in a subsequent step.

A primary survey will be conducted to gather evidence/data for the identification of barriers and enablers that affect the adoption and diffusion of innovation among SMEs. This includes the collection of experience-based views and perceptions particularly referring to the impact of the factors identified in the preliminary stage of desk research. Representatives of SMEs will be asked to contribute to the research by reporting their experiences on integrating technological innovations in their organisations. SMEs representatives' knowledge on the matter will be recorded through a purpose made questionnaire.

This section describes the approach to be followed in the context of the INNOGROW survey for the identification of the enabling and constraining factors that influence SMEs' engagement/investment in innovation activities.

Figure 1: Survey methodology approach

Definition of purpose
↓
Formulation of research questions
↓
Data/evidence collection
↓
Reaching target groups
↓
Data processing and analysis

5.1 Purpose and research questions

The policy purpose of Activity A1.4 is to offer an overview that will enable policy makers: a) to understand the inhibitors and the policy obstacles related to innovation adoption by rural economy SMEs, and b) to improve the management and implementation processes of own policy instruments by providing incentives to SMEs to invest in innovative technologies and participate in innovation collaborative networks.

The gathering of empirical evidence aims to provide insights regarding: a) the current level of innovation capacity of SMEs in rural areas, b) the barriers and enablers that affect rural economy SMEs to invest in new technologies and get involved in collaborative schemes, c) the existing and potential benefits of innovation adoption for rural economy SMEs, and d) the impact of innovation on business operations and SMEs performance.

This study will therefore address the following research questions:

1. To what extent, do rural SMEs invest in innovative technology and get involved in innovative collaborative networks and models?
2. What are the tangible and perceptional barriers affecting SMEs' investment in innovation?
3. How can SMEs overcome the barriers hindering the adoption and implementation of innovation?
4. What are the benefits of the adoption of innovation in rural economy SMEs performance?

5.2 Data collection (structured questionnaire)

A structured questionnaire (Annex A) will be the main instrument for gathering the survey data. The questionnaire will be used to establish a structured, organised and well documented way to collect opinion-based evidence and personal views on certain cases of innovation adoption. A web-based approach will be employed for reasons of practicality, and to facilitate the data collection, coding, and analysis process. The questionnaire is structured in a clear and simple manner to encourage participation and facilitate communication with target groups. Direct communication (by e-mail or phone) with survey respondents could also take place so as to establish an initial contact, allowing asking for additional evidence or clarifications on certain aspects regarding the factors that influence the adoption of innovation among rural economy SMEs.

The survey questionnaire comprises mostly closed-ended questions as they are easier and quicker for respondents to answer; offer better coding, analysis and comparison possibilities; and can clarify question meaning for respondents through response choices. Open questions will not be included, as they pose the risk of obtaining different degrees of detail in answers; responses may be irrelevant; comparisons and analysis become difficult. To ensure consistency and facilitate data analysis, the questionnaire will be developed, communicated and completed in English. Where feasible, and in cases where communication can only be established in national language(s), project partners may translate both the questionnaire and responses.

5.2.1 Criteria and structure

The identification of the factors that affect decisions to invest in innovation will be implemented at the SME level. To ensure that the evidence collected is focused appropriately; data collection should fit the following criteria (quality specifications):

1. Target respondents that include the members of rural economy SMEs that are actively involved in the process of decision making within their organisations, as well as field experts (see section 5.3). In any case, each respondent should represent a different organisation.
2. SMEs that are driven by or based on natural capital / rural environment, contribute to the GDP of rural area, connected with rural-specific activities (see section 3.1).

3. Evidence to be gathered from the countries represented in the project consortium (Greece, Italy, Hungary, Slovenia, Bulgaria, Czech Republic and Latvia), excluding the United Kingdom, which is represented by an advisory partner (UNEW).

The questionnaire will begin with a short introduction that will include: a) the background and objectives of the INNOGROW project as well as the purpose of the collection of good practices on emerging business models for rural economy SMEs, b) assurances regarding anonymity, disclosure and use of collected data, and c) the benefits for providing information on a specific case as a contribution to shared knowledge in the field. The questionnaire is structured into four main sections as described below.

Questionnaire Structure	
Section A: Company profile	Section A gathers information about the SME (industry, number of employees, annual turnover/balance sheet, country and region of business operations), including a preliminary investigation of SME's involvement in innovation-related activities (e.g. use of new production technologies, participation in innovative collaborative networks).
Section B: Needs, barriers and enablers	Section B addresses the needs covered and the objectives met by the transition to an innovation-driven business model. The section focuses on the barriers that may hinder the adoption of innovation or/and may be encountered during the use of new production technologies, seeking at the same time to identify the perceived enablers that prompt an organisation to invest in new technologies or/and participate in innovative collaborative networks.
Section C: Benefits and impact	Section C examines the perceptions of respondents towards the adoption and use of innovative technologies by rural economy SMEs, focusing on the benefits derived and the anticipated impact on business operations.
Section D: Personal information	Section D includes the personal information of the respondent such as position in organisation and contact details.

The online questionnaire to be sent to survey respondents can be found at the following link (https://docs.google.com/forms/d/e/1FAIpQLSdXFA-z36wrBQcHeJ85WjpAZVLpR4KEkVf2w1BxVPUD2rGOpw/viewform?usp=send_form)

5.3 Target groups (survey respondents)

According to the objectives of the survey, the target respondents should include owners/managers/staff of rural economy SMEs, who influence the process of decision making within their organisations, concerning the management, administration, and/or leadership as well as strategic orientation. Thus, the main groups that should comprise the target population of the survey are administrators, managers and executives of SMEs in rural areas. Each respondent should represent a different organisation, since the survey questionnaires inquires the needs of the respective enterprise. An indicative, not exhaustive, list of survey respondents could involve the following:

- **High-level executives:**
  - Owner / Director of company

- **Medium-level executives:**
  - Administrative managers
  - Marketing managers
  - Sales managers
  - Operations managers

- **Low-level executives:**
  - Staff of SMEs with knowledge and experience in the implementation and management of innovation

In addition to representatives of SMEs, field experts with knowledge, exposure and experience on technological innovations for rural economy SMEs will be contacted to provide insights on the main determinants of innovation adoption.

5.4 Sampling considerations and targets for evidence collection

The INNOGROW Application Form dictates that the sample is to be drawn from the countries represented in the project consortium (Greece, Italy, Hungary, Slovenia, Bulgaria, Czech Republic and Latvia)[6].

The methodology suggests two scenarios, regarding the expectations for the target number of answers to be collected: a moderate and a good scenario. In the moderate scenario, the desirable number of completed questionnaires is 300; the good scenario foresees 500 completed questionnaires.

The distribution of answers among the consortium countries will be based on the structure/proportion of the countries' population as presented below.

Table 4: Population distribution in the consortium countries

Consortium country	Population[7]	% participation in total
Greece	10,769,000	10,4%
Italy	60,963,000	59%
Latvia	1,979,000	1,9%
Bulgaria	7,185,000	7%
Czech Republic	10,535,000	10,2%
Slovenia	2,065,000	2%
Hungary	9,835,000	9,5%
Total	103,331,000	100%

Taking into consideration the population distribution, an indicative target number of answers per consortium country and project partner is presented in the following table.

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[6] Exluding the United Kingdom, which is represented by an advisory partner (UNEW) that will not take place in evidence gathering activities.

[7] Source: Wikipedia

Table 5: Target number of answers per consortium country and project partner

Project Partner	Country	Target number (moderate scenario)	Target number (good scenario)
RoT	Greece	40	70
FLA	Italy	60	90
Molise	Italy	60	90
ZPR	Latvia	15	30
SZREDA	Bulgaria	30	50
RRAPK	Czech Republic	40	70
BSC	Slovenia	15	30
PANOV	Hungary	40	70
TOTAL		300	500

5.5 Data processing and analysis

This section presents the steps for the aggregation and processing of the data gathered through the survey questionnaire. Molise is the partner responsible for data validation and processing, as well as the analysis of the evidence collected.

Preparation stage: Data validation and consolidation

Upon the completion of questionnaires, the collected data need to be validated and consolidated, based on the criteria defined in section 5.2.1. Data validation refers to the process of determining whether information gathered during the process of data collection is complete and accurate. Responses that do not meet the criteria/requirements will not be taken under consideration. To consolidate data, information needs to be merged by combining the large amount of data into a single, persistent data source (e.g. one large worksheet) that will reflect all the collected input from survey respondents. A common practice is to create Pivot Tables in MS Excel to facilitate the process of grouping data in a concise, tabular format, which allows for easier reporting and analysis.

First stage: Identifying variables and scales

Statistical computations and analyses assume that the variables have a specific level of measurement and are properly defined. For the purposes of this survey and following the questionnaire structure, variables will be defined as nominal, ordinal or interval to avoid nonsensical results.

Nominal variables	Nominal variables are based on mutually exclusive but not ranked or ordered categories. Yes / no, multiple choice or demographic questions (e.g. country, job profile etc.) are common examples of nominal variables.
Ordinal variables	Ordinal variables have two or more categories, which can be ordered or ranked; however these categories are not equally spaced. Ordinal variables are more flexible than nominal variables and allow for the evaluation of priority issues, opinions or levels of agreement.
Interval variables	An interval variable has two or more categories, which can be ordered or ranked from high to low. In contrast to ordinal variables, the intervals between the values of the interval variable are equal. For example a question with rating scales from 1 to 5.

Second stage: Mapping and coding of responses

Prior to data processing, valid responses will be reviewed and mapped into specific variables based on the type of the question. In order to investigate possible relations between variables, more than one field can be combined. In case of ordinal variables and where required, responses can be recorded in numerical values to facilitate quantitative processing.

Third stage: Statistical data processing

The Microsoft Excel program can be used to process collected data for survey analysis. A pivot table data summarization tool can be used to automatically sort and combine data and return descriptive statistics and frequencies of the predefined data fields.
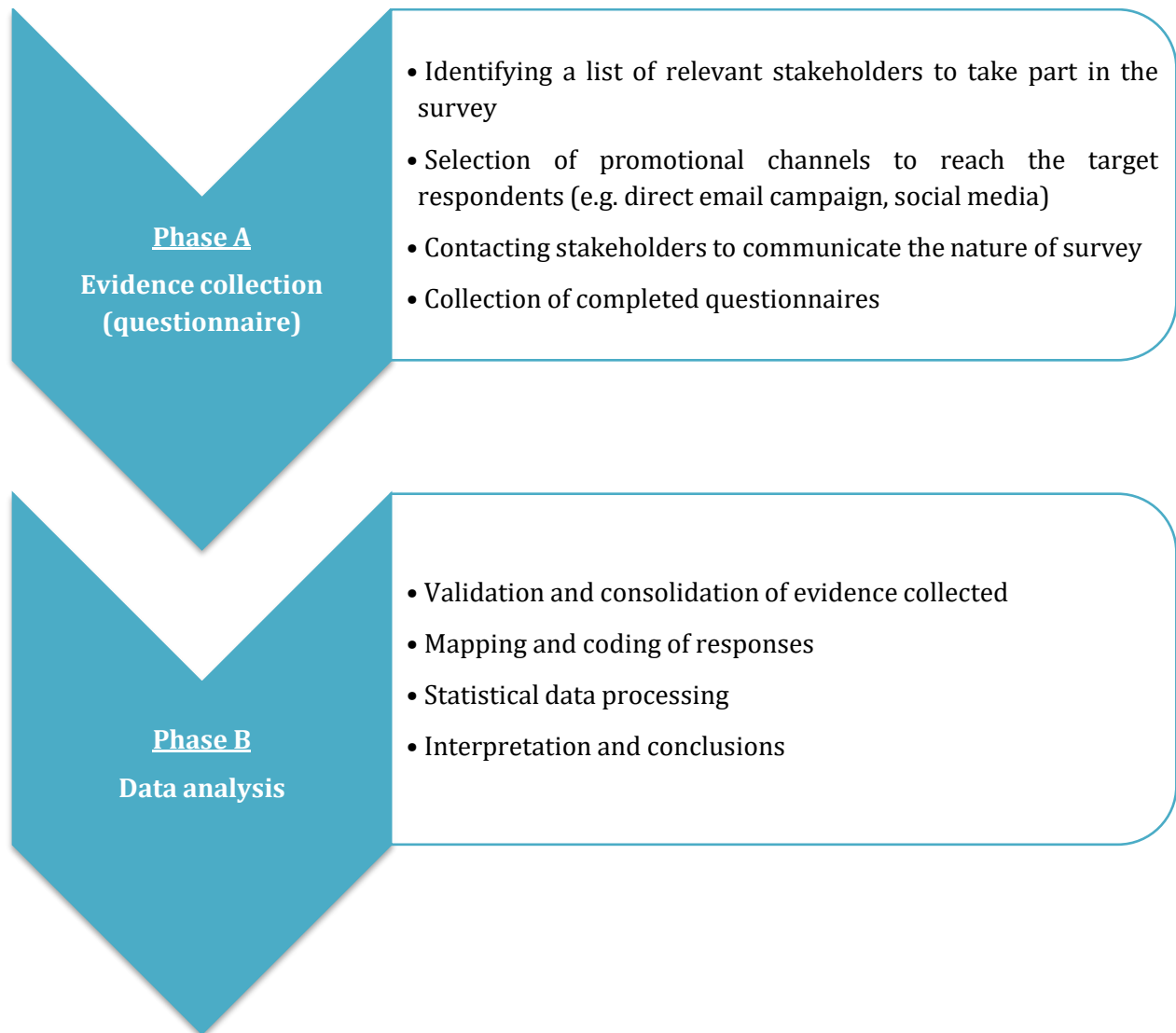
Final stage: Data analysis

Basic tools of descriptive statistics like counts, means, and percentages should be employed (where appropriate) to extract interesting information and conclusions from the replies of SMEs' representatives. For rank order questions, the creation of a statistics table including minimum and maximum ranking, mean ranking variation, standards of deviation and total responses is highly recommended. Furthermore, graphs such as pies, columns and bars could be generated to present the results of the questionnaire. It is certainly easier to observe any pattern emerging from a set of data, when it is visually depicted than by just staring at a branch of numbers.

Figure 2: Graphs in MS Excel

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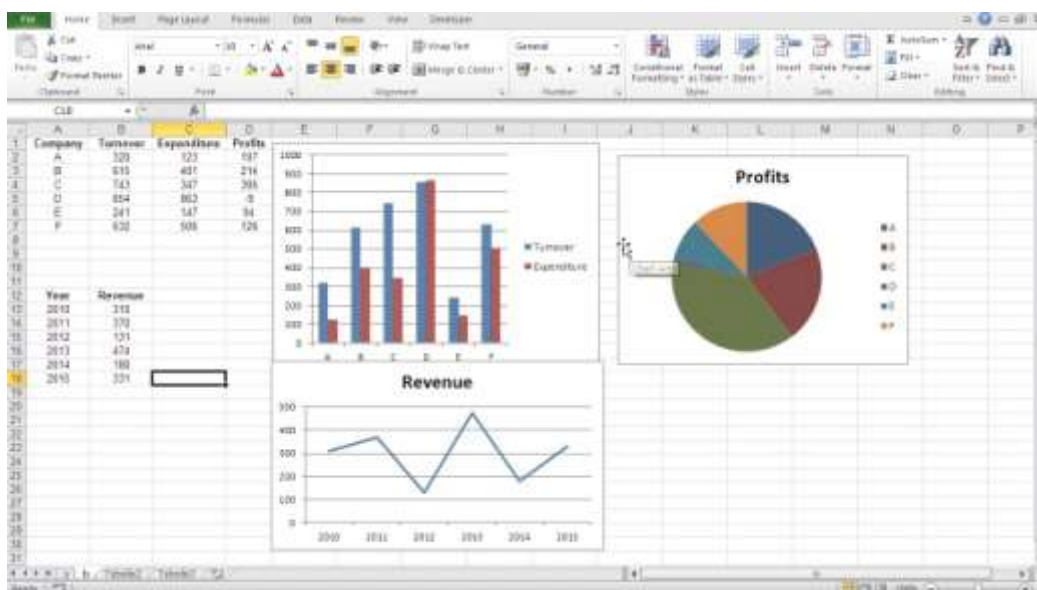
5.6 Research and analysis phases

Research will be implemented in two phases including evidence collection through the online questionnaire and data analysis as indicated below.

Phase A
Evidence collection (questionnaire)

- Identifying a list of relevant stakeholders to take part in the survey
- Selection of promotional channels to reach the target respondents (e.g. direct email campaign, social media)
- Contacting stakeholders to communicate the nature of survey
- Collection of completed questionnaires

Phase B
Data analysis

- Validation and consolidation of evidence collected
- Mapping and coding of responses
- Statistical data processing
- Interpretation and conclusions

6 Action plan and roadmap for data collection

The process for the administration and implementation of the survey has been agreed by the INNOGROW partners as follows:

I. The first draft of methodology, including data collection forms (online questionnaire) will be delivered by the 10th of November 2016. Feedback regarding the methodology report is expected from project partners within the next week. Any comments and feedback will be embedded into the final methodology report until 17 November.

II. The final draft of the methodology will be distributed to all project partners (excl. UNEW) during the last week of November.

III. Each partner will identify a list of relevant stakeholders and develop promotion channels (direct email campaign, social media, publications, etc.) to reach target respondents by the mid of December;

IV. If required, each partner will translate the survey questions into their national language in a document. In this case, Molise will undertake the responsibility to develop the online versions of the questionnaire and upload them on the online survey platform (Google Forms) by the end of December.

V. Each partner will contact stakeholders to communicate the nature of the survey and to request their collaboration in completing the survey. Overall, the survey will be running until the end of January.

VI. All evidence should be gathered and delivered in an integrated format in the beginning of the next month.

VII. At the next stage, Molise will proceed with the processing and analysis of data. The final version of the report on the factors that influence rural economy SMEs to adopt innovation will be delivered by Molise until 30 March 2017.

Chart of implementation for the Activity 1.4 "Investigating the factors that influence rural economy SMEs to adopt innovation"

Months	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17
A1.4 "Investigating the factors that influence rural economy SMEs to adopt innovation" — **Partners**					
Methodology for the identification of the factors that influence rural economy SMEs to adopt innovation (draft version) — **Molise**	▨				
Review of the research methodology — **All partners**		▨			
Update methodology according to project partners' comments and feedback — **Molise**		▨			
Identification of relevant stakeholders and selection of promotional channels — **All partners**		▨			
Translation of survey questions in national languages (if necessary) — **All partners**		▨			
Development of the online versions of the questionnaire in national languages (if necessary) — **Molise**			▨		
Questionnaires forwarded from partners to stakeholders — **All partners**			▨		
Evidence gathered and delivered in an integrated format — **All partners**				▨	
Data processing and analysis — **Molise**				▨	▨
Development of the final report — **Molise**					▨

7   Annex A: Survey questionnaire

What is the purpose of this survey?

To identify the factors that influence rural economy SMEs to invest in new technologies and get get involved in new collaborative models

Who should participate?

Owner / Director of company, Administrative managers, Marketing managers, Sales managers, Operations managers, Staff of rural economy SMEs with important knowledge and experience in implementing innovation.

How long does it take?

The estimated total time for completing this questionnaire is about 10 minutes

Thank you very much in advance for your participation and valuable contribution!

Section A. Company profile

1. Name of organisation/company

```
[                                                                    ]
```

2. Please indicate the country of your organisation

```
[                                                                    ]
```

3. Please indicate the region of your organisation

```
[                                                                    ]
```

4. Please select the main focus/core industry of your organisation
   - ☐ Accommodation
   - ☐ Agriculture
   - ☐ Animal husbandry
   - ☐ Aquaculture / Fishing
   - ☐ Energy and Resources
   - ☐ Food and beverage service activities
   - ☐ Forestry
   - ☐ Manufacture of beverages
   - ☐ Manufacture of food products
   - ☐ Manufacture of tobacco products
   - ☐ Tourism oriented transportation
   - ☐ Other (please specify)...

5. Please indicate the total number of employees within your organisation/company
   - ☐ Less than 10 persons employed
   - ☐ 10-49 persons employed
   - ☐ 50-249 persons employed
   - ☐ 250 or more persons employed

6. Please indicate the annual turnover of your organisation/company

☐ Less than 2 million EUR

☐ From 2 to 10 million EUR

☐ From 10 to 50 million EUR

☐ More than 50 million EUR

7. Have you ever adopted any type of innovation within your organisation?

☐ Yes

☐ No

☐ Do not know / Do not want to answer

8. Please select the types of innovation that your organisation has adopted as part of its overall business strategy (Please select all that apply)

☐ Use of new production technologies and processes

☐ Development of new products / delivery of new services

☐ Development of new market segments for current products

☐ Participation in collaborative networks designed to stimulate innovation activity

☐ Establishment of partnerships with other companies across the supply chain

☐ Investment in R&D activities

☐ Other (please specify)..

Section B. Needs, barriers and enablers

9. What are the main needs / objectives to support the adoption and diffusion of innovation in your organisation? (Please select all that apply)

   ☐ Improve operational efficiency

   ☐ Risk sharing

   ☐ Gain competitive advantage

   ☐ Access new markets

   ☐ Increase market share

   ☐ Increase profitability

   ☐ Increase client satisfaction / Satisfy customers' needs

   ☐ Increase control and consistency

   ☐ Reach a broader audience

   ☐ Meet legislative/policy changes

   ☐ Other (please specify)..

10. To your knowledge, what are the barriers that may prohibit the adoption and diffusion of innovation in rural economy SMEs? (Please select all that apply)

   ☐ Integration of innovations into existing processes (e.g. new production technologies)

   ☐ Availability or adequacy of existing technological infrastructures

   ☐ Uncertainty over business benefits

   ☐ Lack of own financial resources and difficulty in accessing funding from external sources

   ☐ Cultural and traditional issues (e.g. negative attitude towards technology)

   ☐ Regulation / Limited support by regional authorities

   ☐ Accountability / management problems

   ☐ Weaknesses in networking and cooperation with the innovation stakeholders (e.g. technology vendors)

   ☐ Lack of internal research and technological capabilities

   ☐ Other (please specify)..

11. To what degree would the following constitute **problems** for an organisation to invest in new technologies or/and participate in innovative collaborative networks? (where 1 means "low" and 5 "high")

	1	2	3	4	5
Difficulties in the integration of innovations (e.g. new production technologies) into existing processes	○	○	○	○	○
Low availability of existing technological infrastructures	○	○	○	○	○
Uncertainty over business benefits	○	○	○	○	○
Lack of own financial resources and difficulty in accessing funding from external sources	○	○	○	○	○
Cultural and traditional issues (e.g. negative attitude towards technology)	○	○	○	○	○
Regulation / Limited support by regional authorities	○	○	○	○	○
Accountability / management problems	○	○	○	○	○
Weaknesses in networking and cooperation with the innovation stakeholders (e.g. technology vendors)	○	○	○	○	○
Lack of internal research and technological capabilities	○	○	○	○	○

12. To your knowledge, what are the enablers that may support the adoption and diffusion of innovation in rural economy SMEs? (Please select all that apply)

- ☐ Compatibility (integration of innovations in to existing processes)
- ☐ Availability or adequacy of existing technological infrastructures
- ☐ Favourable regulatory framework (e.g. provision of incentives for innovation by regional authorities)
- ☐ Internal capital (from firm and its owners)
- ☐ Market potential
- ☐ Employees with relevant knowledge and skills
- ☐ Private, external funding (bank, investor, venture capital)
- ☐ Collaboration with other businesses across the supply chain
- ☐ Prior experience with new technology implementation
- ☐ Availability of external support (e.g. technology vendors)
- ☐ Other (please specify)...

13. To what degree would the following constitute **facilitators/enabling factors** for an organisation to invest in new technologies or/and participate in innovative collaborative networks? (where 1 means "low" and 5 "high")

	1	2	3	4	5
Compatibility (integration of innovations in to existing processes)	O	O	O	O	O
Availability or adequacy of existing technological infrastructures	O	O	O	O	O
Favourable regulatory framework (e.g. provision of incentives for innovation by regional authorities)	O	O	O	O	O
Internal capital (from firm and its owners)	O	O	O	O	O
Market potential	O	O	O	O	O
Employees with relevant knowledge and skills	O	O	O	O	O
Private, external funding (bank, investor, venture capital)	O	O	O	O	O
Collaboration with other businesses across the supply chain and innovation stakeholders	O	O	O	O	O
Prior experience with new technology implementation	O	O	O	O	O
Availability of external support (e.g. technology vendors)	O	O	O	O	O

Section C. Benefits and impact

14. What are the main benefits to be created by the adoption and diffusion of innovation on the operations of the organisation/company? (Please select all that apply)

   □ Higher productivity

   □ Cost reduction

   □ Better service quality

   □ Increased operational efficiency

   □ Access to new markets / Internationalisation

   □ Greater customer base

   □ Other (please specify)...

15. Please rate your level of agreement with the following statements. The adoption and diffusion of innovation will result in....

	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
Higher productivity	O	O	O	O	O
Cost reduction	O	O	O	O	O
Better service quality	O	O	O	O	O
Increased operational efficiency	O	O	O	O	O
Access to new markets	O	O	O	O	O
Greater customer base	O	O	O	O	O

Section D. Personal information

16. First and last name

[   ]

17. Email

[   ]

18. Position in organisation / company
   - ☐ Owner / Director of company
   - ☐ Chief Executive Officer (CEO)
   - ☐ Chief Marketing Officer (CMO)
   - ☐ Chief Financial Officer (CFO)
   - ☐ Chief Technical Officer (CTO)
   - ☐ Chief Operating Officer (COO)
   - ☐ Administrative manager
   - ☐ Marketing manager
   - ☐ Sales manager
   - ☐ Operations manager
   - ☐ Other (please specify)..

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