Gordon Institute of Business Science
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Motives for resource integration in value co-creation in a multi-stakeholder service ecosystem

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Abstract

The study contributes to the body of knowledge on motives that drive multiple stakeholders to participate in resource integration processes for value co-creation.

The research objectives of why and how multiple stakeholders co-created values were explored through the context of a case of an Intergovernmental Organisation. An exploratory qualitative research methodology was employed to meet these objectives. The study engaged a diverse set of participants from public government, private, academic and NGO sectors, by utilising semi-structured interview approach. The participants further belonged to four GEO Work Plan activities, that were used for within case analysis.

The findings of the exploratory research reveal the interdependency between intrinsic and extrinsic motivation with key motivation themes centred on relationships, learning and identity and voice. The research provides insights for managers in recognizing that psychological traits such as motivation are unique to each stakeholder, hence managers would benefit from obtaining insights into the different motivation drivers and assigned importance by the stakeholder, and to leverage these to improve stakeholder engagement and positioning their value proposition.

Keywords

Motivation, value co-creation, resource integration, stakeholder engagement

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Chapter 1: Problem Definition and Purpose

1.1 Introduction and description of the problem

Due to the complex and ever-changing nature of the business environment and social problems, the need for global partnerships to facilitate collaboration and cooperation among multiple stakeholders is recognised (United Nations, 2002; United Nations, 2015). The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, called for the development and broader use of Earth Observations (EO) technologies through urgent action to strengthen coordination and cooperation among global observing systems and research programmes (United Nations, 2002). Such integrated global observations will have the benefit sustainable development objectives by advancing information systems for long-term collection, sharing and usage of accurate and reliable data. The United Nations' 2030 Agenda for Sustainable Development Goals (SDGs) captures the current sustainability ambitions of the United Nations (UN) member countries. The UN 2030 Agenda aims to support countries in strengthening the capacity of data systems to ensure access to reliable, timely, high quality and disaggregated data through promotion of "transparent and accountable scaling up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, including earth observations and geospatial information" (United Nations, 2015, p. 37).

Intergovernmental organisation that drive the environmental agenda for sustainable development such as the UN tend to be government by treaties and few are established on non-legally basis and tend to be voluntary in nature (Fontaine, 2013). Yet stakeholders participating on voluntary bases are required to commit resources and engage with each other to put the resources in use to generate value. Initially and most often, the concept of co-creation of value was seen from a view of firm-customer relationship (Dong & Sivakumar, 2017), rather than acknowledge more than two actors can be involved in value co-creation, as is this research would argue is the case of global partnerships.

Recently, the concept of value co-creation describes cooperation, coordination, and collaboration between multiple stakeholders, as underpinned by the continuous interaction of resource creation and application provided by actors through mutual exchange, distinct access, and integration (Ranjan & Read, 2016; Vargo & Lusch,

2017). Unlike in the dyadic relationships, where the customer is central to the value co-created, in global partnerships that provide service, all actors are central to value co-creation. The benefits of co-created value tend to be captured in the form of progress towards addressing the social problem or meeting the common objective. However, there is benefit in understanding the value created for each stakeholder as that forms part of the drivers or motivation for participation. This beneficiation by all actors is recognised in that value co-creation views service ecosystems as dynamic networks engaged in creation of value for multiple actors. These ecosystems are said to be resource-integrating, service-exchanging actors, self-governed and self-adjusting through institutions and institutional arrangements (Vargo & Lusch, 2016).

As can be deduced, resource integration is crucial for value co-creation, as without this aspect, there will be no new resources produced, and no value co-created. However, Findsrud, Tronvoll and Edvardsson (2018) found that there is no consensus definition or description of resource integration. The authors did however gather that, resource integration requires competence, usually stated in the form of knowledge and skills, and resource integration requires activity or application. The interaction of the actors is therefore enabled by their competencies which are applied as activitities in resource integration, thereby co-creating value.

The construct that is not obvious in value co-creation literature, and of particularly importance in dynamic networks that aim to address complex social problems, is motivation. Whilst Pera, Occhiocupo and Clarke (2016) are of the view that motives for value co-creation are less understood, other scholars such as (Findsrud et al., 2018) go as far as saying the motives construct is missing. Motivation drives the individual's behaviour and determines the amount of energy that will be exerted in an action. As indicated above, competencies talk to the ability to undertake resource integration, whereas motivation provides the drive to act or put in use that ability. Otherwise, competencies will have no value if not used or directed towards preferred outcomes (Findsrud et al., 2018). Thus, making motivation crucial to value co-creation, at least to a point of requiring attention to improve our understanding of why actors decide to put in use their knowledge and skills.

1.2 Context of the research

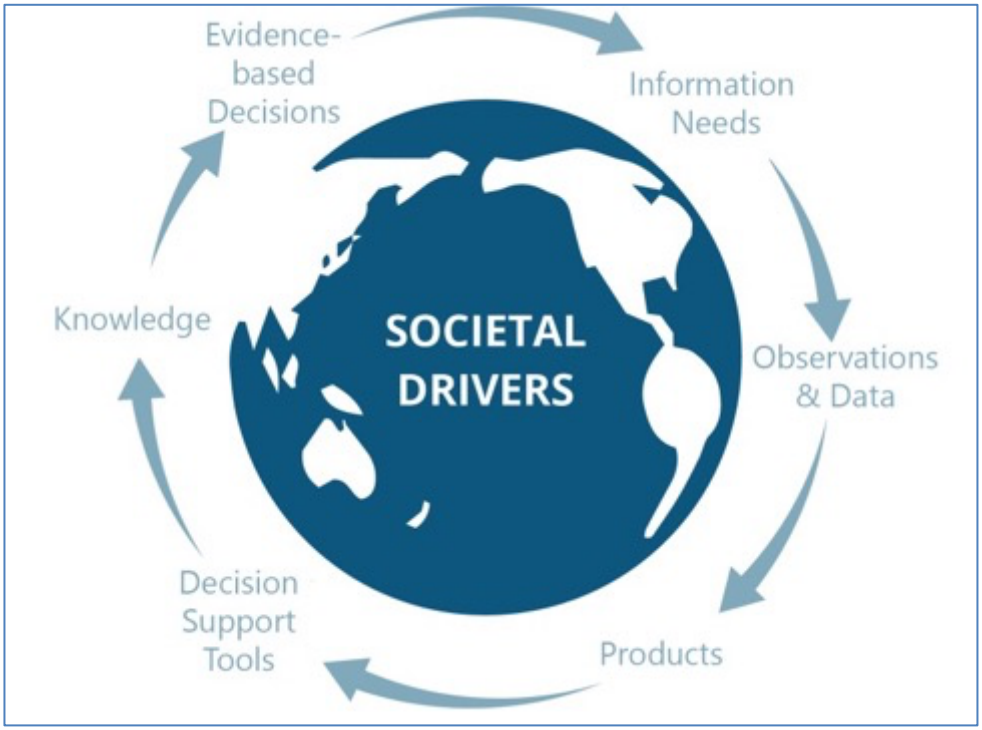
Following the recommendation by (Pratt, 2009) for qualitative researchers to provide a description of the nature of the context that is being examined, the researcher sets out to provide an explanation of the organisation chosen for the case study. The context is further applicable to the sampling undertaken by the research.

In response to the World Summit for Sustainable Development (WSSD) call in 2005 the intergovernmental Group on Earth Observations (GEO) was established. GEO is a voluntary, non-legally binding, global partnership of governments and organisations consisting of public sector, academic and research institutions, private sector, not-for-profit organisations and civil society, and the UN System. GEO differs from other intergovernmental organisations (IGOs) focussing on environmental governance such as the United Nations, in that they are legally binding (treaty-based) organisations (Fontaine, 2013). As of September 2021, GEO had a membership of 113 national governments, over 130 Participating Organisations (intergovernmental, international, and regional organizations) and a growing number of Associates (private sector) and Observers (GEO, 2021).

The then adopted 2005 – 2015 GEOSS 10-Year Implementation Plan captured the intent by GEO to develop the Global Earth Observation System of Systems (GEOSS) and provided a framework for the implementation of GEOSS. The purpose of GEOSS was to accomplish a “comprehensive, coordinated and sustained observations of the Earth system”, (GEO, 2005, p. 1) to improve monitoring, understanding and prediction of the state, processes, and behaviour of the Earth system. The GEOSS was therefore a response to tackling the challenges expressed in the 2002 WSSD, achieving the Millennium Development Goals (MDGs) to advance the implementation of obligations made in international environmental treaties (GEO, 2005). The MDGs were, in 2015, replaced by the United Nations’ 2030 Agenda for Sustainable Development Goals (SDGs). The SDGs committed to support countries in strengthening the capacity of data systems to ensure access to reliable, timely, high quality and disaggregated data through promotion of “transparent and accountable scaling up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, including earth observations and geospatial information” (United Nations, 2015, p. 37).

Also in 2015, the GEO mandate was extended to 2025 by its highest-ranking decision-making body, a Ministerial Summit, comprising of the national government members of GEO, held in Mexico City. The 2015 Ministerial Summit endorsed the GEO Strategic Plan 2016-2025: Implementing GEOSS, reaffirming the original intent of GEO and emphasizing the call on GEO to strengthen stakeholder and user engagement and to support the implementation of the SDGs and other intergovernmental development agendas (GEO, 2015a). The implementation of GEOSS involves the delivery of direct observations, from *in situ*, airborne and space-based systems, and products and services based on the collation, interpolation, and processing of direct observations (GEO, 2005; GEO, 2015b). The GEO mission describes the GEO service as to "unlock[ing] the power of Earth observations by facilitating their accessibility and application to global decision-making within and across many different domains" (GEO, 2015b, p.5). This means turning Earth observations data into information and knowledge for evidence-based decision making is illustrated in Figure 1.

Figure 1 Transformation of data from needs to decision making



Source: GEO, 2020

The primary instrument used to facilitate coordination and cooperation towards achieving GEO's vision and mission is the GEO Work Programme (WP). The GEO

WP is comprised of activities that are conceived, planned, and implemented by multiple stakeholders from the GEO membership aimed at addressing information needs for specific domains, (GEO, 2020) such as found in the SDGs.

Understanding the motivation to bring together competencies for value co-creation is further deemed important for partnerships that are voluntary in nature (Fontaine, 2013). The case of the Group on Earth Observation (GEO), a voluntary, global partnership of governments and organisations consisting of public sector, academic and research institutions, private sector, not-for-profit organisations and civil society, and the UN System, can be applied to value co-created in a service ecosystem. The GEO was established as a response to the 2002 WSSD. Its mission describes the GEO service as to "unlock[ing] the power of Earth observations by facilitating their accessibility and application to global decision-making within and across many different domains" (GEO, 2015b, p.5). The GEO ecosystem provides an opportunity to explore why multiple stakeholders engage with each other, what are the perceived benefits at individual and collective stakeholder levels, what are the resources committed and how these resources are integrated to co-create value.

1.3 Purpose of research

The importance of resource integration in value co-creation is apparent in the descriptions, the motivations that drive stakeholders to participate are however less clear. The purpose of the study is to gain better understanding of the motivations that drive stakeholders, in multi-stakeholder contexts, to participate in resource integration practices for value co-creation.

The research aims to contribute to literature by expanding knowledge on the participation of multiple stakeholders in value co-creation and specifically advancing knowledge on resource integration practices informed by stakeholder motivations. The value co-creation scholars articulate the need for value co-creation to be seen through the lens of multiple actors rather than the traditional dyadic relationship (Ekman, Raggio, & Thompson, 2016; Pera et al., 2016; Vargo & Lusch, 2016) and for the better understanding of motives and purpose that inform stakeholder participation in resource integration (Pera et al., 2016; Vargo & Lusch, 2017). Based on this need the research aims to improve insight of why and how actors in dynamic networks convene to co-create value.

In the management perspective the research aims to provide business managers with practical insights on how to engage and support multiple stakeholders in service ecosystem towards harnessing value co-creation through understanding their motives and therefore willingness to commit resources for the purpose co-creating value.

1.4 Research problem and objectives

The research questions are concerned about why and how stakeholders co-create:

i. What are the motives that inform multiple stakeholders to engage in co-creation of value?
ii. What are the resources made available by the stakeholders for integration towards value co-creation?
iii. How are these resources integrated to co-create value?

1.5 Conclusion and structure of the research

Value co-creation views service ecosystems as dynamic networks engaged in creation of value for multiple actors. These ecosystems are said to be resource-integrating, service-exchanging actors, self-governed and self-adjusting through institutions and institutional arrangements (Vargo & Lusch, 2016). Considering the above, the GEO provides an opportunity to apply the concepts of value co-creation, to a complex social and economic interaction ecosystem, depicted by its stakeholder composition and institutional arrangements. Intergovernmental and voluntary organizations require commitment for collaboration and cooperation amongst multi-disciplinary stakeholders and investments of operand and operant resources (Pera et al., 2016) in order to foster value co-creation and deliver on their business and social compact. Global partnerships, such as GEO, should not only be concerned about creating value for society, but to operate in a manner that creates value for all stakeholders in the ecosystem.

Chapter 2: Literature Review

2.1 Introduction

The study undertook to understand motives that drive resource integration in service ecosystems, characterised as dynamic networks. The framework of value co-creation used in the study was that depicted by Vargo and Lusch (2017) in the form of the interconnected axioms of Service-Dominant (S-D) logic, which they state as follows:

i) axiom 1 - service is the fundamental basis of exchange,
ii) axiom 2 - value is co-created by multiple actors, always including the beneficiary,
iii) axiom 3 - all social and economic actors are resource integrators,
iv) axiom 4 - value is always uniquely and phenomenologically determined by the beneficiary, and
v) axiom 5 - value co-creation is coordinated through actor-generated institutions and institutional arrangements.

According to Vargo and Lusch (2017), core to S-D logic is the depiction of service as superior to provision of goods and services, with service referring to the use of one actor's resources for the benefit of other actors. They further, describe these resources as *operant resources*, such as knowledge and skills, that are applied on other actors' resources to create a benefit. Value co-creation

The study focused on the interaction between axiom 2, 3 and 4, which state that value is co-created by multiple actors, always including the beneficiary, with all the actors being resource integrators and value being uniquely determined by the beneficiary. The term beneficiary is used by Vargo and Lusch (2016) to be inclusive of all actors, not just customers as was traditionally depicted (Dong & Sivakumar, 2017). This means any actor can determine its unique value based on a particular service-to-service exchange. This is further supported by Ekman, Raggio, and Thompson (2016), who recognises that actors play multiple roles during the process of resource integration and value co-creation, by being providers and beneficiaries.

The concept of value co-creation has spread since the early 2000s, challenging some of the critical pillars of capitalist economies, in particular, the determination of value

before a market exchange occurs through supply and demand models, where in co-creation suppliers, customers and other actors continuously interact for the development of new market opportunities (Galvagno & Dalli, 2014) through participation in resource integration practices, suggesting that markets are more about cooperation than competition (Vargo & Lusch, 2016).

Literature recognises that the customer focus on value co-creation literature has received tremendous attention (Galvagno & Dalli, 2014; Mustak, Jaakkola, & Halinen, 2013; Pera et al., 2016) and identify the need for more research in contexts where a variety of stakeholders, not just customers and providers, are involved in co-creation of value (Galvagno & Dalli, 2014; Vargo & Lusch, 2016). Further, research has focused on business-to-customer context of customer participation, the motivation for multiple stakeholders to participate, the providers' readiness to facilitate participation and the manner of interaction by actors to co-create offerings to create value is required (Mustak et al., 2013; Pera et al., 2016).

2.2 Value co-creation

The narrative for value co-creation has developed to be inclusive of multiple actors, beyond the dyadic relationships of firm-customer and business-to-business and captures the central role of resource integration. Value co-creation comprises multiple stakeholders engaged in resource integration (Razmdoost, Alinaghian, & Smyth, 2019) and service exchange (Vargo & Lusch, 2016) occurring through collaboration mechanisms that are enabled by stakeholder-generated institutions and institutional arrangements (Vargo, & Lusch, 2017).

Customer or user participation, has been for decades one of the essential themes in both management research and service marketing, referring to the customer's contribution of resources such as labour and knowledge, before, during and after use, to the creation of resources used in turn to create value (Mustak et al., 2013). Scholars (Galvagno & Dalli, 2014; Vargo & Lusch, 2017) acknowledge the debate in the literature on the need to distinguish between co-production and co-creation and ascertain that co-creation is encompassing all occurrences in which actors, including companies and customers, generate value through complete engagement and interaction. In service ecosystems, products and services are still provided and may be the entry mechanism for actors to join the partnership, however the main value

propositions of these is the provision of service, critical to which is resource integration.

Other researchers (Ranjan & Read, 2016) have considered co-production and value-in-use rather as distinct elements, which must both be present in value co-creation. In their study, they organise co-production into three categories of knowledge sharing, equity, and interaction. Whilst they categorise value-in-use into three elements of experience, personalisation and relationship. Therefore, emphasising that in co-production there is an aspect of exchange and through use, value is always created. An alignment with the description of resource integration could be found with the application of knowledge and interaction. However, as later demonstrated in this chapter, these aspects on their own are not enough to drive value co-creation.

2.3 Service ecosystems and resource integration in value co-creation

Stakeholder engagement has been extensively covered in literature, however, mostly from the strategy and organisation perspective. Stakeholder theory suggests that “paying attention to multiple stakeholders secures tangible and intangible resources (including knowledge and reputation) that may ultimately create organizational wealth or value for shareholders” (Hillebrand, Driessen, & Koll, 2015, p.413).

According to Vargo and Lusch (2017) the exposure of other actors, beyond the dyadic and other firms (competitors and suppliers), towards the actor-to-actor notion extended the customer connections involved in resource-integration activities (service-for-service exchange) and came with two revelations. Firstly, that the operant resources used by the actors in service provision were both the source and the combined outcome of resource-integration (leading to axiom 4). Secondly, it revealed a network structure that had dynamic, recursive properties beyond those typically found in networks. Whereas the network theory recognises the complexity of exchange value due to the level in which a stakeholder exchange relationship in the network influences and necessitates support of other stakeholders (Hillebrand et al., 2015), other scholars have differentiated business ecosystems from networks in that each occasion of resource integration and service provision changes the nature of the system and the next iteration context of value creation (Pera et al., 2016).

The service ecosystems extend network conceptualisation beyond connecting people, resources, and product flows. The S-D logic framework firstly, provides for connections that represent service-for-service exchange; secondly, the actors are further defined in terms of the resource-integration actions afforded by the service exchange and lastly the network has a purpose for individual wellbeing, as a part of collective wellbeing (Vargo & Lusch, 2017; Wilden et al., 2017). This recognises service provision as a connector between the actors, that all actors are resource integrators, and all actors have a beneficiary role at some given time in the service exchange, and hence value is co-created.

2.4 Resource integration

Resource integration is prominent in value co-creation and yet there does not seem to be a clear definition (Peters, 2016) of resource integration in the literature. A detailed literature review conducted by (Findsrud et al., 2018) supports the view that there is no consensus on the definition of resource integration, rather scholars provide varying descriptions, identifying resources and competencies as prerequisites, or as something that must be acted upon or as an outcome. The lack of a definite definition might be due to the complexity of resource integration, especially when considering that resource integration may result in new potential resources (Vargo & Lusch, 2016) that are not yet known. Further to this difficulty could be that resource integration occurs in context (Peters, 2016) the actors involved at a given context decide on resource contributions and resource integration.

Vargo and Lusch (2016), attempted to provide clarity on resource integration by stipulating that actors utilise operant resources on operand resources for competitive advantage and to co-create value. They describe operand resources as referring to physical objects over which the stakeholder has usage authority over, while operant resources are the actors' competencies and capabilities. Competencies consider knowledge, skills and quality of relationships with other stakeholders (Pera et al., 2016). Whereas, Findsrud et al. (2018) provide that resource integration i) contains an active or behavioral element, such as an activity, exchange and use; ii) involves combining of resources; iii) is conditioned by institutions and institutional arrangements such as rules and norms; and iv) include outcomes, such as well-being and value for other. Peters (2016) adds to this debate by stating that only in the case

of emergent resource integration, where emergent resources were used, can new resources be derived and therefore lead to value co-creation. This leads from the suggestion that actors may interact with each other during resource integration, however this interaction alone is inedequate to understanding resource integration. Distiguising between summative and emergent resource integration processes, as described by Peters (2016), would enable actors to determine whether their engagement in resource integration will yield the desired outcomes. The research suggest that these outcomes, at actor level, are dependent and unique, informed by the motives directed to desired goals. In addition to integration, (Peters, 2016) further identifies a second concept related to resources in Service-Dominant Logic, that being interaction.

2.5 Institutions and institutional arrangements

The actor-to-actor concept in service ecosystems, suggests the presence of methods for coordination of actors to facilitate resource integration and service exchange, leading to the introduction of institutions and institutional arrangements in value co-creation (Findsrud et al., 2018; Vargo & Lusch, 2016).

Ecosystems and institutional theory are two interconnected theoretical orientations of S-D logic, which their importance for understanding value co-creation has not been fully explored and such exploration is deemed important in the future development and broadening of S-D logic toward long-term relationships, and contexts in which value co-creation emerges with the help of a variety of stakeholders other than providers and customers (Galvagno & Dalli, 2014; Vargo & Lusch, 2017).

2.6 Motives for resource integration in value co-creation

Though competencies provide the stakeholders with the know how or ability to integrate resources, the ability must be applied for an activity to occur (Findsrud et al., 2018). The decision to use abilities is mostly informed by motivation. Motivation is described as personal psychological process that is informed by the interaction between the individual's internal environment and external environment resulting in a particular behaviour or action, influenced by level of applied energy.

There are two simplified forms of motivation behaviours, intrinsic and extrinsic forms. Intrinsic motivation refers to a behaviour that occurs purely for its own sake, whereas

extrinsically motivated behaviour is informed by anticipated gain or loss (Findsrud et al., 2018). Intrinsic motivation is naturally the preferred motivation behaviour in business environments, because stakeholders who are intrinsically motivated tend to express more interest and confidence, resulting in enhanced persistence. However, due to the presence of multiple actors and institutional arrangement in resource integration, most of the activities are extrinsically motivated (Pera et al., 2016). It becomes important therefore to understand how to motivate actors to carry-out resource integration activities (Findsrud et al., 2018).

There are several motivation theories, such as self-determination, attribution, social cognitive, goal setting and flow, that researchers like Findsrud et al. (2018) and Sugathan et al. (2017) have started to use to explore how motivation influences the direction, intensity, and persistence of resource integration and encourages value co-creation. Self-determination or internalisation describes the actor's motivation range from unwillingness, to compliance, to effective personal commitment (Hardyman et al., 2019). Through self-determination extrinsic motivation, as found in the case of resource integration can be internalised into intrinsic motivation. In multiple actors' environments, actors learn from each other's behaviours and consequences, following cognitive theory, which further allows for feedback to be provided. This would be evident, for example, where new actors join a service ecosystem and learn, acceptable and not, institutional behaviours from other actors.

In motivation theory, personal goals are perceived the same way as purpose or intent, in that the goals provide direction for what is intended to be accomplished. Razmdoost et al. (2019) supports the notion of goal setting from a premise of setting direction by focusing value co-creation on a specific objective enables identification of resource integration processes. Articulating the goal, however, does not mean the actor will chase after it, hence social cognitive theory establishes goals as precondition to behaviour (Findsrud et al., 2018). This is of importance to resource integration as value realisation is in the future and the motivation behaviour needs to be set in the present. The goal therefore becomes a motivator. As resource integration has a potential or future value, due to new resources being generated in the value co-creation process, this is a further reward for actors who are motivated and willing to be involved.

Since there is little literature on the motivation aspect of resource integration (Findsrud et al., 2018) and the motives of actors in an ecosystem to co-create (Pera et al., 2016) there is a need to understand what drives the stakeholders to commit resources for integration.

2.7 Conclusion

The literature affirmed the need to understand the motives that drive participation of stakeholders in value co-creation and how co-creation is achieved through resource integration in service ecosystems. The literature review provided guidance n the most appropriate ways to capture stakeholder motives, mechanisms for resource integration and understanding of perceived value.

Chapter 3: Research Questions

3.1 Introduction

The purpose of the study is to gain better understanding of the motivations that drive stakeholders, in multi-stakeholder contexts, to participate in resource integration practices for value co-creation. The value co-creation scholars articulate the need for value co-creation to be seen through the lens of multiple actors rather than the traditional dyadic relationship (Ekman, Raggio, & Thompson, 2016; Vargo & Lusch, 2016) and for the better understanding of motives and purpose that inform stakeholder participation in resource integration (Pera et al., 2016). Based on this need the research aims to improve insight of why and how stakeholders in dynamic networks convene to co-create value.

3.2 Research questions

The research was an attempt to answer the following three questions:

Research question 1: What are the motives that inform multiple stakeholders to engage in co-creation of value?

The purpose of this question is to explore and understand why individuals and organisations participate in value co-creation. In particular, the question will gather insights on the motivations that drive the participation.

Research question 2: What are the resources made available by the stakeholders for integration towards value co-creation?

The purpose of this question is to understand the nature of resources that organisations make available and utilise in the process of value co-creation.

Research question 3: How are these resources integrated to co-create value?
This question aims to explore how stakeholders bring together their motivations and resources in order to co-create value. The processes and mechanisms put in place in a self-governed environment to support value co-creation will be explored.

Chapter 4: Choice of Research Methodology and Design

4.1 Introduction

The research investigated motives that drive multiple stakeholders to integrate resources towards value co-creation. In chapter 3 the study outlined research questions that were developed to explore the problem. This chapter discusses the research methodology and design chosen for the study and provides the rationale for the selected methodology. The chapter also details the population, unit of analysis and sampling method that were deemed appropriate for the research. Further, the data gathering approach, the research instrument and the data analysis approach followed by the study are discussed. The chapter concludes with a discussion of the identified limitations of the research.

4.2 Methodology and design

Academic researchers such as Findsrud et al. (2018) and Pera et al. (2016) noted the lack of theory and literature on the motivation aspect of resource integration and the motives of actors to co-create value. The study adopted the qualitative and exploratory research method, as it aims to gain insights on the constructs in the research questions which are inadequately explained by the existing theory (Merriam, 2002). Saunders & Lewis (2018) describe qualitative exploratory research as an attempt to provide tentative answers to the questions posed by the research, where more research could be required to get definitive answers. Qualitative research enables the researcher to wrestle questions of “how” rather than “how many” and provides for understanding the phenomena from the viewpoint of those studied (Pratt, 2009).

4.2.1 Research strategy

Saunders and Lewis (2018) emphasise the choice of research strategy must be informed by the research questions, the researcher’s prior knowledge, time, and resources at the disposal of the researcher. The research questions, as described in chapter 3, asked the “why”, “what” and “how” questions to enable the exploratory nature of the research. To explore the motives for resource integration in value co-creation in multiple stakeholder ecosystems a case study research strategy was applied. A case study strategy facilitates theoretical insight on the “why”, “what” and

“how” questions about a current set of events over which the researcher has limited control (Pera et al., 2016). Further, a case study is suitable when a contemporary phenomenon is being explored in its real-life context (Kazadi, Lievens, & Mahr, 2016). The focus on one organisation, the GEO, though a limitation for generalisation to a larger population, provided the researcher with a detailed understanding of the context of the research (Flick, 2014). Due to the provision for in-depth exploration, the case study approach provided generalisation of the theoretical construct (Mills & Birks 2014). The selection of one case study was also a consideration of the cross-sectional nature of the study.

4.2.2 Research approach

The research applied the inductive reasoning approach as existing assumptions about the motives of multi stakeholder participation in value co-creation were limited (Saunders & Lewis, 2018). The researcher collected data by form of semi-structured interviews and by applying inductive reasoning on the data allowed for the emergence of patterns leading to general theory formulation (Flick, 2014; Saunders & Lewis, 2018).

4.2.3 Semi-structured interviews

Though qualitative research methodology holds great opportunities for in-depth exploration on research questions, it has several areas of contention including the lack of accepted standard for writing up and determining quality (Pratt, 2009), the connection the researcher has with his or her own society, with the data, and with the participant (McCracken, 1988). The importance of the connection or relationship of the researcher with the study is supported by the view of the researcher as a human instrument in qualitative research (Flick, 2018; Merriam, 2002).

A well designed semi-structured interview approach was used to mitigate against the numerous challenges resulting from the contention areas. The interview process adopted was according to McCracken (1988) four-step method of inquiry, which started with a detailed literature review followed by the researcher’s cultural review, both of which provided a list of topics that informed the third step of interview instrument construction. The constructed interview instrument catered for preliminaries to be made during the interview process, contained biographical and categorical questions which also acted as planned prompts. To prepare for the fourth

step of data analysis, informed consent was obtained from each participant to have the interviews recorded as audio and video records.

The semi-structured interview was deemed the most powerful technique for the research to gather information and insights about participant's subjective states, observations, experiences (Flick, 2014) and "allow participants to tell their own story in their own terms" (McCracken, 1988, p. 6).

4.3 Research setting

4.3.1 Population

Saunders and Lewis (2018) define a population as the entire set of group members. Considering the research applied the case study strategy and having identified the GEO as the case, the population for the study are organisations and individuals that participate in GEO. The organisations in GEO comprise of public sector, private, academic, and non-for-profit organisations.

4.3.2 Unit of analysis

The unit of analysis for a case study can be from the level of an individual person to the level of the organisation (Mills & Birks, 2014). For this research the unit of analysis was the organisation. The GEO Work Programme (WP) is the mechanism used by the organisation to develop and deliver products and services. Because value co-creation is implemented through resource integration of competencies of the organisation and the cognitive skills of the individuals (Vargo & Lusch, 2016), the organisation was used as the unit of analysis.

4.3.3 Sampling method and size

True to the spirit of lack of agreed upon standards in qualitative research, supporting numerous other scholars Flick (2014, p.2) states "put simply, sampling really matters", whereas McCracken (1988) contradicts this by stating the identification of participants for qualitative research interviews must not follow sampling rules. The research chose to follow Flick (2014). Reaching the full population for the study was deemed unrealistic due to the cross-sectional nature of the study and researcher's ability to reach the full population (Flick, 2014). The research hence employed a non-probability sampling technique, which does not require access to the full list of the population, rather allows the researcher to use own judgement to select a sample

best suited for the research (Saunders and Lewis, 2018). To best respond to the research questions, organisations of interest to the researcher were those that participated in the WP activities. Though all WP activities are required to submit a list of contributors to the activity, the list is not frequently updated. This meant the researcher did not have access to the complete list and contact details of organisations contributing to the WP.

As a qualitative study, with an interest on the "why" questions, the research did not intend to make statistical inferences from the collected data, thus the non-probability sampling technique was further found appropriate for the study. Of the four non-probability sampling techniques, being the volunteer, quota, purposive, and convenience sampling, the purposive sampling technique was chosen for the research. According to Saunders and Lewis (2018), with purposive sampling technique, the researcher's judgement is applied in the development of the criteria to select the sample based. The criteria were set to go beyond demographic elements such as age and gender to include identities such as roles and interactions such as activities and outcomes (Flick, 2014; McCracken, 1988) based on the researcher's knowledge of the case.

Applying within-case sampling (Flick, 2014) the research used activities of the GEO WP to inform the sampling criteria. The GEO WP consisted of over 60 activities, with varying levels of complexity and maturity, defined from most complex and mature to least, as Flagships, Initiatives and Community Activities. The maturity referred to service maturity, availability of a policy mandate, geographic reach, and number of contributors. The heterogenous purposive sampling variety technique was then applied, whereby the diversity in the type of organisations that contribute to the delivery of service was considered. From the 60 activities, 15 activities were found to have all four types of organisations, those being public sector, private, academic, and non-for-profit organisations. The underlying premise of heterogenous purposive sampling variety is that "any patterns that emerge are likely to be of particular interest and value, representing key themes" (Saunders and Lewis, 2018, p.146) which aligned with the research interest to formulate theory from the data collected.

Whilst maintaining the diversity of stakeholder participation, 4 out of the 15 activities were selected, those being one Flagship, two Initiatives and one Community Activity.

The selection of the sample considered the time constraint and access to participants for the research. The researcher's decision on the 4 activities was based on the knowledge the researcher had of the Points of Contacts (PoCs) of each activity. To maintain the heterogeneity of the sample, the PoCs were requested to identify and provide contacts for at least two most active contributors to the service provided by the activity, for each of the four organisation categories. Due to the global nature of the organisation, geographical and gender representation was further considered by the researcher. Hence, the sampling criteria meant to ensure the research questions benefited from unique perspectives of the diverse stakeholders (Kazadi et al., 2016; Pera et al., 2016) and to manufacture distance between the researcher and participants (McCracken, 1988).

Due to the lack of a standard on number of interviews appropriate for qualitative research (Flick 2014; McCracken, 1988; Pratt, 2009) researchers provide varying guidance on the issue. From no greater than eight (McCracken, 1988) participants to Saunders and Lewis (2018) stating that for a heterogenous sample, such as was the case for this research, a non-probability sample size of between 12 and 30 participants is likely to be sufficient. Due to the heterogenous qualities of the chosen sample for the study, an initial sample of 24 participants was selected, with a final list of 18 participants recorded. Information on the participants based on the major sample criteria elements is presented in Table 1.

Table 1: Summary of participants with some of the criteria elements

No	Pseudonym	GEO WP Activity	Organisation	Race	Gender	Geography
1	Simon	Community Activity	NGO	White	Male	Europe
2	Milo	Flagship	Private Sector	White	Male	Europe
3	Gareth	Flagship	NGO	White	Male	Europe
4	Tim	Flagship	Government	White	Male	Americas
5	Mateo	Initiative	Private Sector	White	Male	Europe
6	Lucy	Initiative	Government	White	Female	Americas
7	Sarah	Initiative	NGO	White	Female	Europe
8	David	Initiative	Academic	White	Male	Europe
9	Kaleb	Initiative	Academic	Black	Male	Africa
10	Felix	Initiative	Academic	Black	Male	Africa
11	Harry	Community Activity	Academic	White	Male	Europe
12	Jim	Initiative	Academic	White	Male	Europe
13	Peter	Initiative	Government	White	Male	Americas

No	Pseudonym	GEO WP Activity	Organisation	Race	Gender	Geography
14	Ezra	Initiative	Government	Black	Male	Africa
15	Mia	Community Activity	Private Sector	White	Female	Europe
16	Kevin	Initiative	Private Sector	White	Male	Americas
17	Clara	Flagship	Academic	Black	Female	Africa / Americas
18	Vera	Initiative	Private Sector	Black	Female	Africa

The initiative category has most activities in the GEO Work Plan than any other category and most participants in GEO are from Europe, hence the dominance seen from these two categories in Table 1.

4.4 Data Collection and Measurement Instrument

"There are many roads that lead to Rome, and that some are straighter whereas others are (seen as) more meandering" (Flick, 2018)

4.4.1 Data collection

The issue of data collection is topical even in our daily lives, from defining trace data, big data, ownership, privacy, and ethics points of view. Flick (2018) suggests that in qualitative research, what is deemed data, the manner data is collected and the qualitative analysis process for deriving meaning are not divorced from the context of the phenomena. Hence resulting in different methods and considerations for data collection. Considering the many roads that lead to qualitative data collection, including interviews, observations and reviewing of documents, the researcher chose to collect data primarily by use of semi-structured interviews and secondarily by review of organisation documents.

For the interviews, an interview guide was prepared (see Appendix A) to guide the interaction with the participants and to assist the researcher in ensuring all relevant topics were covered in the interview. An element of structure to the interview was provided through a set of standard questions asked to all participants, enriched by probing questions based on the responses obtained from the participants (Ahlin, 2019). Probing on information provided by participants, the researcher was able to gain in-depth exposure and make sense of how and why multiple stakeholders involved in value co-creation are motivated. The semi-structured method solicits and enables sharing of viewpoints by participants that are of importance to them (Ahlin,

2019), thereby allowing them to tell their own story (McCracken, 1988).

The second data collection method applied was organisation document collection and review. These were publicly available organisation documents, in the form of reports, website content, and academic research reports, relevant to the research questions.

The collection of data by these two methods (documents and interviews) enabled the researcher to interact with participants, in the interviews, towards understanding their motives for value co-creation and used the documents for triangulation, hence establishing a connection between the data collection methods and research question (Flick, 2018).

McCracken (1988) four-step method of inquiry for qualitative interview and Saunders & Lewis (2018) guidance on undertaking semi-structured interviews were used by the research. These encompass: preparing for the interview, piloting and conducting the interview.

4.4.2 Preparing for the interview

In preparing for the interviews, an interview guide was constructed (see Appendix A) to include a section for preliminaries, a section on biographical, grand-tour and categorical questions. The construction of the questions was informed by the intensive literature review undertaken, the researcher's cultural review (McCracken, 1988) and theoretical assumptions (Roulston, 2010). The researcher's cultural review is important as the researcher has been part of the community used in the case study.

The questions were formulated as open and nondirective (McCracken, 1988), allowing the participants to respond in a manner that illustrated their perspectives on the topic. The biographical questions allowed the participants to ease into the interview by sharing relevant information about themselves (McCracken, 1988). Whereas the grand-tour and categorical questions were used to solicit and prompt participants for information based on topics informed by the need to answer the research questions (McCracken, 1988).

An invitation to participate in the research study was sent in advance to each participant via email. The participants were asked to review, complete, and return the informed consent form (see Appendix B). The informed consent form provided the assurance that the researcher would apply ethical and confidentiality conduct (Roulston, 2010). It further provided an indication of the amount of time required from the participant. The interview guide was also shared in advance with the participants as a strategy to manage anxieties and prompt thinking, even if subconsciously, about the interview topic. A three (3) weeks doodle calendar schedule was shared for participants to indicate their availability. Recalling that majority of the participants were based in Europe, the researcher successfully planned the interviews to occur before the European summer holiday.

The researcher used the indicated availability slots to schedule the interviews using an online virtual platform. Holding the interviews physically was not possible due to restrictions necessitated by the Covid-19 pandemic and all the participants were based outside South Africa. At the start of the interview, after obtaining informed consent, participants were requested that the interview be recorded to enable transcription for analysis.

4.4.3 Piloting

Semi-structured interviews allow the researcher a level of informality when conducting the interview and probing on questions. However, the researcher needs to know that the questions will be understood by participants, are nondirective, and will provide appropriate data to the researcher (Saunders & Lewis, 2018). For this reason, two pilot interviews were undertaken, which also allowed for checking on the amount of time required. The piloting indicated that some of the information participants provide in earlier questions might be repeated in later questions, but it was appropriate to keep the later questions for affirmation and new material was also provided. The pilot interviews were transcribed and based on the richness of information received, were taken as part of the official sample of the study.

4.4.4 Conducting the interviews

The interview process allowed for preliminaries, undertaken at the beginning of the interview, that established the researcher as curious, eager to listen and receive the story of the participant with interest (McCracken, 1988). The interviews were

conducted in English because all the participants and the researcher were fluent in the language. Though three participants requested the researcher to be patient with their English, this was not a hindrance to telling their story and expressing views. Hence the services of a translator were found not to be necessary.

Ultimately, the study comprised of 18 participants active in the GEO Work Programme. Though by interview 14 the researcher interview notes indicated the level of new information was minimum, the researcher continued to request further interviews focusing on African black females and private sector participants for increased diversity in the sample. This focus, consistent with purposive sampling, was based on initial comparison of the data collected at this stage, to build on similarities or difference on data pertaining to inequalities and contribution by these categories.

Information about the 18 participants is presented in Table 2 in the order of occurrence of the interviews. The interviews were conducted over a period of one month, in July 2021 to early August 2021. The interviews were scheduled mostly for July 2021 based on the researcher experience with Europeans taking their summer holidays in the month of August.

Table 2: Participants details and date of interviews

Order	Interview Date	Pseudonym	GEO Activity	Organisation	Years in GEO / Activity
1	12-Jul-2021	Simon	Community Activity	NGO	5
2	12-Jul-2021	Milo	Flagship	Private Sector	5
3	14-Jul-2021	Gareth	Flagship	NGO	6
4	14-Jul-2021	Tim	Flagship	Government	7
5	15-Jul-2021	Mateo	Initiative	Private Sector	13
6	16-Jul-2021	Lucy	Initiative	Government	4
7	19-Jul-2021	Sarah	Initiative	NGO	10
8	19-Jul-2021	David	Initiative	Academic	5
9	20-Jul-2021	Kaleb	Initiative	Academic	2
10	21-Jul-2021	Felix	Initiative	Academic	5
11	21-Jul-2021	Harry	Community Activity	Academic	5
12	22-Jul-2021	Jim	Initiative	Academic	5
13	26-Jul-2021	Peter	Initiative	Government	15

Order	Interview Date	Pseudonym	GEO Activity	Organisation	Years in GEO / Activity
14	27-Jul-2021	Ezra	Initiative	Government	2
15	28-Jul-2021	Mia	Community Activity	Private Sector	7
16	29-Jul-2021	Kevin	Initiative	Private Sector	5
17	03-Aug-2021	Clara	Flagship	Academic	6
18	04-Aug-2021	Vera	Initiative	Private Sector	2

Participants were assigned pseudonyms to retain the human connection. The majority, 61%, of the participants are active in GEO Initiative category, two Initiatives were selected. The one Flagship formed a 22% representation, and the one Community Activity formed a 17% representation. As discussed in section 4.3.3. the GEO Initiative category, has the most activities in the GEO Work Plan. The academia made up 33% of the participants, private sector 28%, government 22% and not for profit non-governmental organisations (NGO) made up 17% of the participants. The knowledge the participants have of their activities and GEO was reflected in the number of years the participants have either been with GEO or the specific GEO activity. The data showed that 61% of the participants have been with GEO for 5 to 10 years, 22% for less than 5 years and 17% for more than 10 years. The diversity in the criteria was to ensure perspectives are captured from a variety of participants in GEO.

The interview statistics, as displayed in Table 3, show that a total of 15 hours 20 minutes (920 minutes) of audio recording were captured. The audio recording was then transcribed, resulting in 128 pages and 59 816 words. The data indicates the average interview as 51 minutes, and the average transcript length as 3 323 words.

Table 3: Research participants and interview statistics

Order	Pseudonym	Interview length (hh:min:sec)	Word Count	Number of Pages
1	Simon	00:50:17	3 372	8
2	Milo	00:55:42	4 596	9
3	Gareth	00:50:39	3 195	7
4	Tim	00:28:32	2 502	6
5	Mateo	01:03:14	4 552	9

Order	Pseudonym	Interview length (hh:min:sec)	Word Count	Number of Pages
6	Lucy	00:45:26	3 337	7
7	Sarah	00:47:18	2 551	6
8	David	01:00:52	2 971	7
9	Kaleb	00:49:47	2 029	5
10	Felix	00:27:42	1 872	5
11	Harry	01:00:32	5 299	9
12	Jim	00:43:17	3 619	7
13	Peter	01:17:31	4 665	9
14	Ezra	00:42:32	2 497	6
15	Mia	01:39:44	3 824	9
16	Kevin	00:45:00	3 075	7
17	Clara	00:45:50	3 835	7
18	Vera	00:26:56	2 025	5
	Shortest interview	00:26:56	1 872	5
	Longest interview	01:39:44	5 299	9
	Average	00:51:10	3 323	7
	Total length	**15:20:51**	**59 816**	**128**

The longest interview was 100 minutes with Mia, a participant working in private sector participants who has been with GEO for seven years and contributed rich insights to the research.

All interviews were conducted virtually using the Zoom online meeting platform. The researcher had experience with multiple online platforms and had determined that Zoom was more widely used and tended to have less challenges than other platforms. As it turned out, only one interview technical challenges were experienced when due to internet connection failure which was quickly restored as the researcher had a back-up plan. To improve the human connection between the researcher and participant, interviews were held with video cameras on. This enabled the participants to see how engaged the researcher was and for the researcher to make determinations, like instances when the question was not understood, the participants would hesitate with flickers of confusion. The researcher also used the camera function for applying animation and humour to probe for further information to some of the responses.

To maintain participant confidentiality, in accordance with the individual participant

signed informed consent form, transcripts and file names were anonymised. To achieve anonymity and still maintain human connection, all 18 participants were assigned pseudonyms during the transcription and will be referred to by the pseudonyms in subsequent chapters.

4.4.5 Transcription

Having received consent from the participants, the interviews were digitally recorded for transcription. An audio and video recordings were made for each interview and the researcher took notes as backup, in an event something went wrong with the audio recording. According to Flick (2014) transcription is by its nature selective and open to systematic bias which could be minimised by using reasoned choices to make decisions. The researcher chose to focus the transcription to the verbal component, rather than the way the words were spoken, nor any non-verbal behaviours displayed when the words were spoken by the participants. The researcher made this choice because transcribing beyond the words spoken did not fit with the purpose of the research (Flick, 2014). The use of extralinguistic behaviours by the researcher and the participants were described in the above sections to support probing during the interview process, rather than capture them in the transcript.

The audio recordings were converted into a document using the Otter.ai computer software. The researcher then transcribed all the 18 interviews because “One cannot fully understand data unless one has been in on it from the beginning” (Chafe, 1995, as cited in Flick, 2018, p. 6). Transcribing the individual interviews ensured the researcher was immersed into the data, improving the richness of the understanding of the data which further supported the data analysis process. The software was set to delete primary fillers, such as um, whilst the researcher chose to delete repetition of words. The researcher followed standard orthography by applying standard dictionary spelling and maintaining the British spelling throughout, which meant pronunciation by participants may have been lost, which was deemed not important to the purpose of the study. The researcher constantly returned to the audio recording (Flick, 2014) to check the transcription made by the software and address interpretation of the different ascents and linguistic mannerism of participants. The most notable misinterpretation was the word “GEO” transcribed as “jail”.

4.5 Data analysis approach

The researcher perspective of the interpretation and analysis of the data was driven by empathy interpretation, rather than suspicion interpretation. Utilising empathy interpretation the researcher aimed to elaborate and amplify the meaning of the collected data (Flick, 2014). This was done through finding patterns and relationships in the data. Creswell (2007) provides guidance for qualitative data analysis by means of a general process consisting of i) preparing and organizing the data for analysis, ii) undertaking coding and reducing the data into categories and themes, and iii) presentation of the data and themes in figures, tables and analysis discussion. The application of the process in the research is discussed in the following sections.

4.5.1 Data preparation for analysis

The audio recorded interviews were transcribed by the researcher to ensure verbatim data capture for in-depth understanding and rich data analysis. The researcher personally undertook the transcription of the interviews to ensure accurate capture, representation, and immersion into the stories of the participants. A file naming convention, comprising of key identifiers derived from sampling criteria, was used to name each interview transcription data file. The naming convention later supported within-case analysis for an in-depth exploration of the case, involving “an intimate familiarity with a particular case in order to discern how the processes or patterns that are revealed in that case” support the research questions (Mills, Durepos, & Wiebe, 2010, p.2).

With the naming convention in place, each transcript document was then imported into Atlas.ti, a qualitative data analysis computer programme. The software programme supported the researcher in data management by providing for easily storing and organizing the data, coding the collected data line by line, locating and accessing the codes and categories generated by the researcher (Creswell, 2007). Lastly the software enabled the researcher to easily query and present the data, codes and themes for analysis. Due to the researcher being a novice in the use of this software application, not all its functions were utilised.

4.5.2 Data analysis procedure

Data analysis by coding involved the review of transcribed interviews, using empathy interpretation, to examine the features of data for meaning, noticing patterns and

relationships. Implementing the recommendation by Miles and Huberman (1994), an iterative coding process comprising ‘filling in’, ‘extension’, ‘bridging’ and ‘surfacing’ was followed. The first stage, ‘filling in’, involved identification of codes as new observations of the data and new insights emerged. Each transcript was individually analysed as a unit of analysis to gather understanding of the experience of the individual stakeholders and to recognize the emerging patterns. The codes were assigned to phrases, sentences and paragraphs.

The emergence, or lack thereof, of new codes indicated saturation by interview 6 (Figure 2), corresponding with the researcher’s assessment of the interviews. A relative high number of new codes were discovered again in interview 12 and 13.

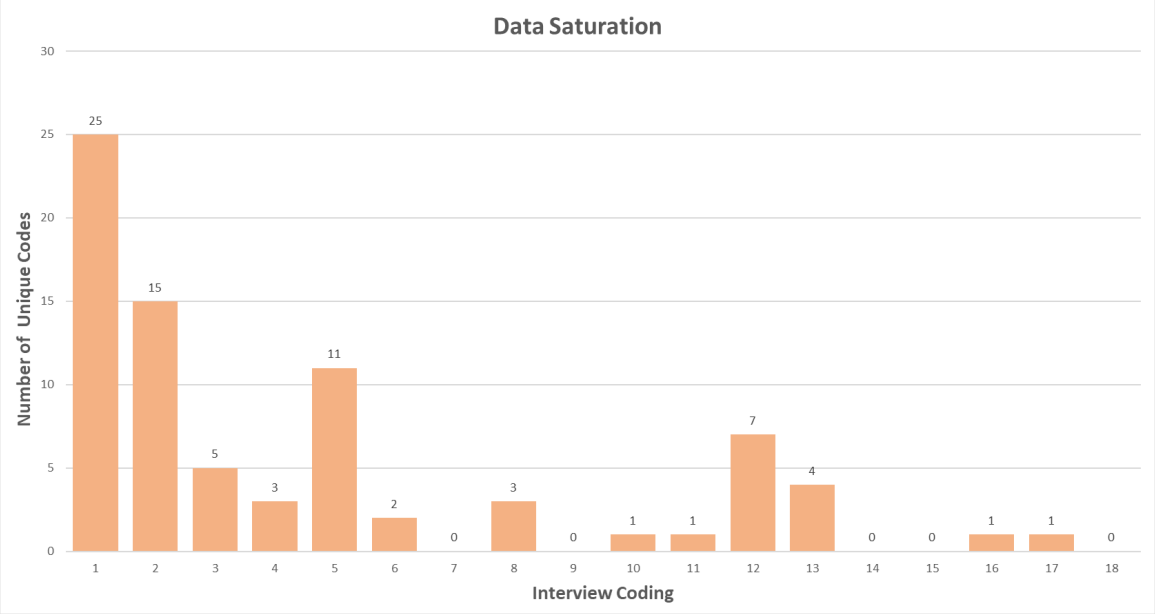


Figure 2: Data saturation through coding

The second stage involved categorical aggregation and the search for emerging patterns and the third stage started by organizing the data into units of information through building categories and patterns inductively to enable meaning extraction and theory development. In this stage, ‘extension’ was salient, involved revisiting the earlier codes with new relationships or theme in mind, whilst ‘bridging’ considered previously not yet understood or misunderstood connections within a category resulting in either splitting or merging codes. Lastly ‘surfacing’ resulted in identification of new categories.

The research aimed to explore the motives (why) and resources integration processes (how) of multiple stakeholders engaged in value co-creation. Guided by the research questions, thematic analysis was undertaken. The data was searched for relationships between the categories and the different themes that emerged. Prospective patterns and relationships within and between the themes and the core theme of “multiple stakeholder value co-creation” were explored to establish exactly how they influence the shared aspects of the participants.

4.6 Ensuring quality

The research used case study as a research strategy. To ensure quality in the research, quality evaluation measures and strategies for ensuring it were considered and planned for throughout the research process (Morse, Barrett, Mayan, Olson, & Spiers, 2002; Rule & Jonh, 2011). The applied criteria and strategies included i) trustworthiness, achieved by crafting thick descriptions and verifying data with participants, ii) triangulation and iii) research methodology coherence.

To ensure trustworthiness the researcher constructed thick descriptions of the case and context as seen in Chapter 1 as well as thick description of the data and research findings as presented in Chapter 5 of this report. Rule and John (2011) suggest that a thick description assists to achieve credibility of the case and occurrence of reader-determined transferability. They further add that verification of data with participants improves data accuracy and credibility. The research provided an opportunity to some participants to review the transcripts, especially the data to be used as quotations, to ensure participants were comfortable.

The study applied multiple corroborative data sources to allow for data triangulation and counterbalancing limitations and biases of one dataset by another (Kazadi et al., 2016). The one source of information was organization documents pertaining to organisation structure, stakeholder engagement processes and work programme documents relating to activities being undertaken by the multiple stakeholders. The other source was the researcher conducted in-depth interviews with the identified sample, comprising 18 participants. Triangulation was hence achieved through the use of multiple data sources (interviews and documents) to assure the quality of analysis of the data and to substantiate findings.

Lastly, the strategies applied included methodological coherence, as illustrated in above sections of this chapter, and appropriate sampling which resulted in 18 semi-structured interviews conducted.

4.7 Ethics

The research was conducted in accordance with the ethical guidelines provided by the University of Pretoria's Gordon Institute of Business Science. Ethical clearance approval was obtained from the institution (Appendix C). Based on the guidelines the researcher safeguarded against:

- Purpose of the study: the researcher explained to each participant the purpose of the study and that responses would be used for academic purposes and recommendations would be shared with GEO management. Permission to conduct the study was received from GEO.
- Right to privacy and anonymity: each participant was assured that all data will be reported without identifiers, preserving confidentiality.
- Right to withdraw: each participant was informed that their participation was voluntary and of their right to withdraw from the interview at any time without penalty.
- Permission to record: each participant was advised of the intention to audio and video record the interviews for the purpose of data analysis. The video recording was due to the nature of the interviews being held using an online platform.

The researcher recorded the above aspects of into a consent form (Appendix B) each participant signed by the researcher provided assurances to safeguard the following If you have any concerns, please contact me or my supervisor. Our details are provided below.

4.8 Limitations

The choices made throughout the research process such as research methodology, case selection, sampling and data collection methods presented certain limitations to the research. The limitations were identified as follows:

- Though, due to the in-depth exploration afforded by a case study, it is envisaged that the study will contribute to value co-creation knowledge, however generalisation of findings to the entire population of cases is not feasible due to single case study research design (Rule & John, 2011).

- In considering availability of participants, the interviews were time limited, and therefore restricted exploration of other factors influencing motivation for resource integration, such as institutions and institutional arrangements. To mitigate this limitation organisation documents were collected and used.
- To improve level of participation in the research, the researcher targeted participants that were understood to be very active in the chosen activities. This could have potentially restricted access to those stakeholders who possible see limited or no value in co-creation in the context of the chosen case.
- The researcher's knowledge and participation in chosen case, has potentially introduced researcher bias in the study. To mitigate against researcher bias, the sampling criteria was diverse, and the researcher requested activity focal points to identify potential participants, therefore limiting selection of people known to the researcher.

4.9 Summary and conclusion

This chapter explained the research design and methodology applied by the researcher. This started with the discussion of the research design appropriately selected as inductive reasoning with exploratory qualitative and case study as choice of methods. Limitations of the study related to the chosen research methodology and mitigating measures were discussed. The chapter further presented strategies for ensuring quality and ethical behaviour throughout the research project. In the next chapter, Chapter 5, the results from the data analysis are presented, for later discussion and association with the literature in Chapter 6.

Chapter 5: Research Findings

"Qualitative research starts from and returns to words, talk, and texts as meaningful representations of concepts" (Pratt, 2009)

5.1 Introduction

The purpose of the study was to explore the motivations and resources of multiple stakeholders engaged in value co-creation. In Chapter 4 the report outlined the research methodology applied by the study towards answering the research questions presented in Chapter 3. This chapter presents the findings from the semi-structured interviews conducted with participants from government, private sector academia and non-government organisations involved in the four GEO Work Programme activities. The discussion and analysis of the findings will be discussed in Chapter 6.

The chapter provides details of the participants and description of the data analysed which included semi-structured interviews and documents. The semi-structured interviews were guided by the research questions. The results of the interview and document analysis are presented in this chapter in line with the research questions.

5.2 Overview of the sample

The research sample was representative of four sectors (Table 4). The academic sector was the most represented of the sectors, followed by private sector, government or public sector and lastly NGOs.

Table 4: Participants profile by sector

Sector	Organisations
Academic	6
Private Sector	5
Government	4
Non-Government Organisation (NGO)	3
Total	**18**

The participants' experience in GEO ranged from 2 to 15 years (Figure 3). The majority of participants having been participating in GEO for 5 – 10 years.

Participants, such as those with more than 10 years in GEO, may have had a longer time in GEO than the actual activities engaged in the research.

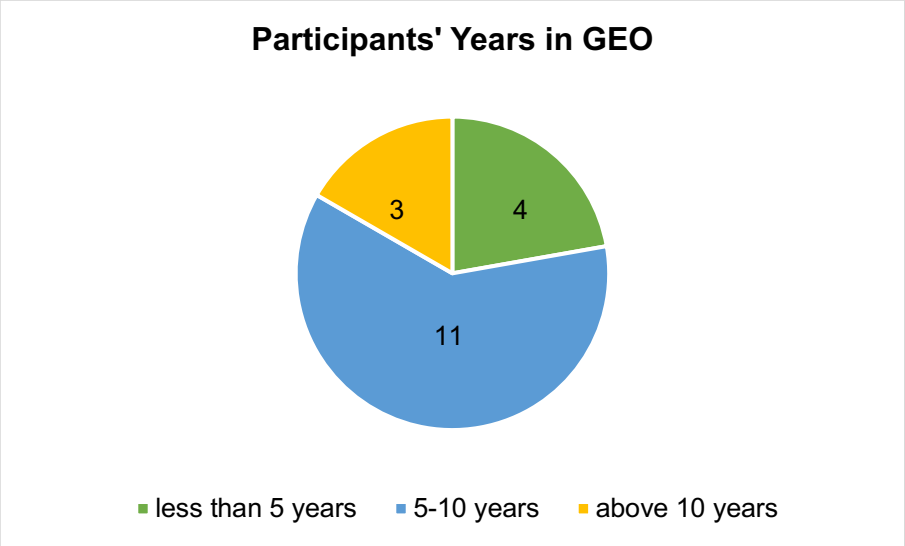


Figure 3: Years of participation in GEO

Participants from the Initiative category accounted for the majority at 63% (Table 5), which is aligned with the spread of the GEO Work Programme. The activities have been in the GEO Work Programme for 2 to 10 years, in their current form. For example, Initiative-2 contributed to GEO activities and adhered to its principles for over 2 years before it officially became part of the GEO Work Programme.

Table 5: Participants distribution according to GEO Work Programme Activity

GEO Activity Type	No. of Participants	Years in GEO WP	Type of Service
Community Activity	5	2	Spatial Decision Support System (DSS) for agricultural monitoring.
Flagship	4	10	Crop Monitor for food security
Initiative-1	6	9	Coordination and capacity development through product demonstrators for the oceans
Initiative-2	3	2	Coordination and capacity development through product demonstrators for four thematic areas
Total	**18**		

The four activities provided a frame for within case analysis.

5.3 Presentation of findings

The research aimed to understand the motivation of stakeholders and resources made available towards co-creating value in a multiple stakeholder environment. In particular in voluntary intergovernmental organisation that aim to contribute to grand societal challenges. The findings of the research are presented below according to the 6 themes (Table 6) used to explore the aims of the research.

Table 6: Summary of occurrences by theme and activity type,

Research Questions (RQ)	Themes	Community Activity	Flagship	Initiative-1	Initiative-2	Overall Occurrence by Theme
RQ1 and RQ3	User and Stakeholder Engagement	32	17	32	27	**108**
RQ1	Stakeholder Motives	37	44	83	39	**203**
RQ1	Derived Benefits	54	70	56	44	**224**
RQ1-3	Institutional Model	31	31	60	20	**142**
RQ2	Engaged Resources	72	48	89	50	**259**
RQ3	Resource integration	19	30	38	22	**109**
		245	**240**	**358**	**202**	**1045**

The occurrences by theme mapped to against the four sectors represented in the case are shown in Table 7.

Table 7: Summary of occurrences by theme and sector

Research Questions (RQ)	Themes	Academic	Government	NGO	Private Sector	Overall Occurrence by Sector
RQ1 and RQ3	User and Stakeholder Engagement	40	20	18	30	**108**
RQ1	Stakeholder Motives	71	41	33	58	**203**
RQ1	Derived Benefits	79	56	25	64	**224**
RQ1-3	Institutional Model	44	38	12	48	**142**
RQ2	Engaged Resources	75	60	46	78	**259**
RQ3	Resource integration	40	20	18	30	**108**
	Totals	344	236	152	313	**1045**

The results of the research are presented through the lens of the 6 themes in the rest of the chapter below.

5.3.1 User and stakeholder engagement

This theme explores how stakeholders perceive co-creation in GEO activities. It provides insights to the aims of the research as stipulated in research question 1: *What are the motives that inform multiple stakeholders to engage in co-creation of value?* and research question 3: *How are these resources integrated to co-create value?*

The analysis of the data resulted in 5 categories under this theme, presented in Table 8.

Table 8: Category occurrence for the user and stakeholder engagement theme

Category	*sub-category*	**Community activity**	**Flagship**	**Initiative-1**	**Initiative-2**	**Overall Occurrence**
Co-creation	push factors	4				**4**
	institutional experience	1		3	4	**8**
	nascent	5		2	1	**8**
	embedded	5	3	7	3	**18**
Feedback on solution usability		9	5	8	5	**27**
Formulate user needs		7	1	11	7	**26**
Trust and ownership		1	4	2		**7**
User maturity		3	6	5	10	**24**
	Overall occurrence	**35**	**19**	**38**	**30**	**122**

According to the data, co-creation is fundamentally based on the engagement between providers and users. It is mostly driven by knowing who the users are, engagement to formulate user needs and solicit feed on solutions being developed. Co-creation is mostly embedded in the case, according to the within case data analysis, and in activities where it was perceived to be nascent, the stakeholders have institutional experience on co-creation that they bring into the activities.

The description of co-creation as understood by the participants in the case is best described by **Ezra** of the Community Activity:

> "… co creation process in line with the GEO activity I can describe it in four main points. First, the identification of and analysis of end user needs because we need to understand what the problem is and where it originates

instead of starting with application, tools and products without knowing the real needs. Second, we identify and select reference pilot sites with involvement of end users or stakeholders, [thirdly] the translation of the needs formally connected to services or solution and then the capacity building for the application of the solution. And finally, we'll get ideation and the replication of the solution by the end users.''

Clara of the Flagship had the view that co-creation brought success and sustainability to their service:

"How would I describe co-creation in [our activity]? Potentially we have some products that work really well if integrated. But, in order for them to be directly integrated, we have to do a lot of modifications, changes and adaption, with whoever the stakeholder is. We revisit huge components of the systems. I would say for everything that we have some success in, there's definitely been co-creation, revisiting everything requires that we do with our stakeholders. A lot of EO things, the way to put it is that you can't just bring something and drop it somewhere and [think] that it will work. I don't think that's a sustainable or useful approach.''

Felix of the Community Activity offered lessons learnt from previous activities and the importance of co-creation in current activities:

''First off, I think it's very important, this concept of co-creation. Looking back, there have been instances where we have had to develop certain applications without involving the beneficiaries and the users. And so, these applications end up just sitting on the shelf. It's very important that from the word go, we engage with our stakeholders, especially the beneficiaries of these applications, and the intermediary users, so that we can bring them on board, and we can hear their voice and see how we can integrate those voices into the development of the product. Co-creation has become for us very important and very critical for ensuring the uptake of these applications come to fruition and also be able to sustain the efforts of this application development going forward.''

Kevin of Initiative-1 and **Gareth** of the Flagship illustrated how when co-creation is embedded in an activity with multiple stakeholder actors can be both providers and

beneficiaries, resulting in value co-creation:

> **Kevin** shared: ‘’We are a technology company, we generate software, and there is value for us to have understanding of use cases of how that can help support science. And through our relationship with the different project team members. They were the scientists, and they knew what they wanted to do as far as coming up with a framework or a methodology for generating a product or they knew most of that. And what we were able to do is take their good science and their good methodology and implement that within the geospatial framework to produce an output product using our technology. That's really a true success story there because you you're able to work quickly between science and technology and develop a product.’’

> **Gareth** reflected: ‘’Well, what I understand with co-creation, the main point is to work together because we know each other, same actors, and it's good to have a platform where together we stay a couple of hours to prepare a [product]. I can say that the discussion or information are very good for everybody. Sometimes, we have to find an agreement, sometimes it's not all the same view. But at the end of the day, we find an agreement on the message that we want to deliver, this is important.’’

Whereas some participants felt co-creation was still at a nascent stage in their GEO activity.

> **Simon** of Initiative-2 shared: “From my point of view, it was a beginning of trying to understand co-creation and co-design. It was mainly based on some very general aspects. But it was really depending on the user, so there were some users that they were really interested and had time.”

David of the Community Activity elaborated on some of the challenges with achieving value of co-creation:

> “I would describe value co-creation in my geo activity as absolutely nascent. Partly because it's dealing with the problems of decolonization and partly because it doesn't have a clear idea of the commercial model through which it wishes to engage with different African stakeholders…. Value co creation, in the context of remote sensing and African agriculture is particularly

interesting and problematic. Because where are the funding streams which will allow value to be created, which will allow markets to form? …. There's another interesting aspect to this, which is the economic ideology that different partners bring… the capitalist ideologies at work.''

Vera, a stakeholder in the same activity as David provided an indication of the approach used for co-creation in their activity:

"We have really tried to integrate co-creation and co-design approaches within the development of particularly the … geoportal. This has been seen through the annual engagements that we have very constantly at local level and constant engagements with the different users who we supported to be our end users for the platform. Through that, we have been able to particularly raise awareness on our intentions, but also collect feedback through administration of surveys or questionnaires. Also ensure that we do collect and try to understand what the capacities of different institutions are, what we envision would be the users of this platform, through that we have been able to also ensure that we modify, or we just create solutions or use cases that are specific to answering the problems of the different institutions and organisations we are working with.''

The power hierarchies raised by David were identified in the interview with **Peter**, who stated:

"I think we're very sensitive to coming from a developed country, like the US, we need to be very sensitive that, [we do not say] "we're here from GEO, we're here to help you, we're here to solve all your problems", [rather we need] just to be very humble, to listen, to communicate, and to hear what the needs are … and that's how you can make the match. By working together, you can find solutions together.''

Jim had a view that in general co-creation is present, however it may be implemented too late in the service development process:

''The advocacy for it seems to be there. I personally often think of co-creation is done too late people bring in people to co create at the end, which is far too late, you need them there at the start. I'm delighted that for those kinds of activities, we were brought in at the very start, to the blank page, and which

the true test of co-creation and co-design and make use of what I call co-delivery, which is the final stage of actually delivering together.''

According to other participants the late implementation may be due to the technology development pathways.

Mateo described this as: "… the whole notion of co-creation for me it depends on how you look at it. With Earth observation, all this technical stuff, you can start from scratch and say - what are the needs? But usually, you start with an idea which you have - you can provide some added value with this technology. And then we have the first round of users' workshop, where people said yes, this is interesting, but we want to know more. And then different things happened.''

David provided further thought from a user stakeholder perspective:
''…there is a tendency, when we're thinking about co-creation, to assume that you need to go straight away to the users, to the ultimate stakeholders and say, "What is it that you need?''. But with certain forms of product, you cannot begin like that. With remote sensing, there is a tremendous gulf between the users experiencing some form of pain, and the data providers who know what these data can do. Because there are four or five radical innovations in remote sensing, which are transforming the sorts of services and products that can [be] offer[ed]. The people who know that and understand that are remote sensors, the techie guys, and this is partly why we still got time for them. Because the stuff that they know, could be immensely useful. But getting that value co-creation requires forms of engagement between them, and potential stakeholders, which we're still trying to work out how to do.''

Other participants reflected on how embedded co-creation was in their institutions, inferring that they are bringing this practice into their GEO activities.

Jim mentioned: ''From my institution we have the advantage that we've been involved in co-creation for a long time, even before it was called co creation... We've been doing stakeholder engagement and participatory governance since 1995. It's been very useful in terms of when we worked in GEO, I

suppose the most recent examples would be to design sessions at the GEO symposium.''

Ezra stated: ''The co-design approach is something that is fully in line with our mission … to transfer knowledge, build capacity, and perform advocacy on everything that is dealing with management of natural resources. The core design approach is something that is very important to us, and also for me personally. The approach we have adopted [in our organisation] is to make sure to involve all the main stakeholders and end users of the different product applications tools, from the beginning of the initiative, in the definition of the problem, the designing of the solution, meaning the services or decision support tool. We also take them into account in terms of capacity building to ensure ownership and use of the different products, services, and tools.''

Mia shared how in her institution and sector they have integrated co-creation: ''In our experience in the private sector, we never say co-creation, these types of things we call best practices, because as a community, we are a bridge with another communities…we bridge the oil and gas community with the insurance community with agro industry community. We have co-creation always in our best practices because we needed to have an understanding between communities, discussing in the same type of language, like "okay, you have a challenge, you have an issue and a need, and our industry may help you solve this type of problem, this type of challenge, which type of a needs that you have that our industry or our services could help you with that process". You can apply that to any corporate or sector, it is the same system to better understand their issues.''

The data highlighted the role played by users or beneficiaries of a service in co-creation.

Sarah mentioned: ''Is very much about talking to the users of the information that [the activity] is trying to provide to them… to talk about their needs. And also, to make them aware of information and products that are already out there… also getting their input on the sorts of products that they would find useful. It's very much bringing together the providers of data, the scientists who are working on the data, with the end users.''

The main aspects of co-creation identified in the data analysis were user engagement, shared expertise, capacity development for ownership, sustainability and challenges arising from power hierarchies.

5.3.2 Stakeholder motives

The theme explores the motivations of actors to take part in value co-creation and explores research question 1: *What are the motives that inform multiple stakeholders to engage in co-creation of value?* The drivers or motivations for stakeholders to engage in value co-creation through the GEO Work Programme activities are presented in Table 9 and the connection between the categories are presented in Figure 4.

Table 9: Categories for stakeholder motives

Category	*sub-category*	**Community Activity**	**Flagship**	**Initiative-1**	**Initiative-2**	**Overall Occurrence**
Challenge on motives		2			1	**3**
Community network	convening power	2		3	3	**8**
	increase linkages	11	3	10	7	**31**
	keep abreast	2		6	3	**11**
	relationships	4	3	8	1	**16**
	resource mobilisation	3	1	3	2	**9**
	fun and passion	3	4	11	1	**19**
Learning	combined know how	5	6	8	3	**22**
	processes and practices	4	3	2		**9**
	resource mobilisation	1		3	1	**5**
Reduce duplication			2	5	1	**8**
Science for societal benefit		4	8	15	8	**35**
Visibility and recognition		5	3	11	6	**25**
Voice being heard			5	8	7	**20**
	Overall Occurrence	**46**	**38**	**93**	**44**	**221**

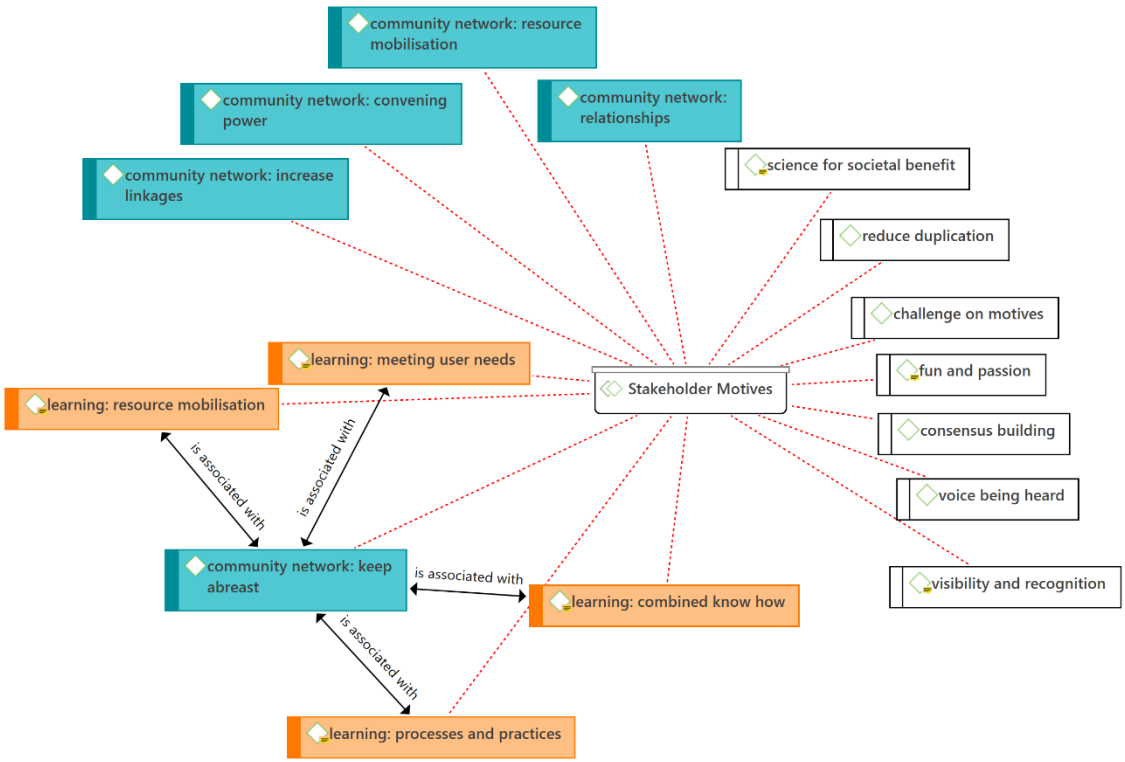


Figure 4: Network representation of stakeholder motives

The analysis of the words used by the participants, following "GEO", "people" is the next most used word by the participants. This resonates with motives being human cantered the critical role played by actors in value co-creation.

Community network

The multiple stakeholder setting was viewed by participants to hold value for building relationships, meeting with others, as a source of information, and as a mechanism to increase connections and linkages with other GEO activities and also with external networks. The bringing together multiple actors talks to what is at times referred to as the convening power of GEO. The value of relationships and strong connections to people were raised.

Community Activity	**Mateo** (Private) supported this by stating "… you get involved in GEO, you see the added value of people meeting …"
Initiative-1	**Sarah** (NGO) stated: ''… convening power is one. The links to organisations that we wouldn't otherwise necessarily come across … through GEO contact been made possible. The same with some private sector organisations as well. Networking and meeting people, organisations, who are slightly outside of our normal circle"

	Peter (Government) "I help make connections and help other agencies and countries and organisations get more value … an ability to see the bigger picture, and ability to bring people together. That's something actually that I bring, is a network. This is all about, it's actually very simple, in many respects, it's all about people. It's all about finding people with a common vision, common interests and passion. And that's what we've done. So, a bunch of, as I like to say, like minded co-conspirators that in our own tiny way, want to save the world."
Initiative-2	**Mia** (Private) framed it as: "For me the stakeholders, opportunities to meet, to embrace, to talk, is really enriching'' **Lucy** (Government) "We're just very interested in getting connected with more like minded people"
Flagship	**Clara** (Academic) ''Also, we're all standing together, the success of what we do, you can't do it as an individual. The success, I feel for me, is the personal relationships that I have with the people that I work with the most, they're like my toolbox. They're like my arsenal... That's what I call my superpower. The relationships.''

The ability to bring more partners and to leverage the community network to advance personal and business objectives was highlighted as a motivation. It was further found that the GEO activity itself benefits from the increased linkages from the networks that individuals and organisations already hold and bring into the community network.

Community Activity	**Ezra** (Government) I can talk about the networking. It's a very good result, a relevant network of regional and international level expects and researchers. **Vera** (Private) "We believe that, as a company, the one of the biggest ways of being able to drive business and being able to maintain our presence in the industry has been through outreach [networks]. From a personal perspective, it was to ensure that we do maintain a proper outreach [networks]. One of the best ways to do that was to ensure that we

	align ourselves with activities or programmes that relate to Geo globally." **Felix** (Academic) "We also have a network of institutions that we work with, we also work with the grassroots. And that's something that might sound or look intangible. But I think these are very useful resources that we also bring to the table."
Initiative-1	**Sarah** (NGO) "a few of them have good connections to different user groups or to different intergovernmental organisations, or to different governments, or to the private sector.'' **Jim** (Academic) ''Access to people who wouldn't necessarily work with an interdisciplinary area, which is good for me personally, GEO facilitates that as a conduit to meet other people…''
Initiative-2	**Mia** (Private) ''The network that GEO brings is excellent. I think it is the main benefit.'' **Harry** (Academic) "… we do see a lot of value in doing networking and engaging with countries and people and the scientists and stakeholders and private domain sector, I mean all over the world and this is GEO for me … the possibility to speak with so many different communities. With GEO we have actually tried it, we did it finally, to create the different communities all over the world and these communities are finally communicating [with] one another. We have been invited several times by communities of practice to present our work …''
Flagship	**Gareth** (NGO) "Usually, we provide the Country and the Regional Office, with all the indicator mapping of the indicators in our seasonal monitor … now we are planning to change a bit the structure to decentralise our seasonal monitoring system to the regional bureaus. In this way they already have the information, but when they have also all the system in their hands, they are more interested to participate. Headquarters will be always there, but we see the importance of the contribution of the regional bureau, that's why now we are trying to involve regional bureau in the GEO [activity].''

Learning

Continuous learning, whether for research and development or for improvement of

business processes and practices is fundamental to delivering fit for purpose products and services. The data on the motives of the stakeholder supported this sentiment and indicated an alignment amongst the activities on the value of combined or shared learning through individual competencies that are brought into the collaborative space.

Community Activity	**Ezra** (Government) ‘’I have gained a lot of knowledge. I have learned a lot and we have shared our experiences from dealing with 26 African countries.’’ **Felix** (Academic) ‘’I've come to know a lot more people, lot more organisations, efficient way of doing things, even managing geospatial projects and assignments. Personally, I have gained a lot of experience working with [GEO activity].’’
Initiative-1	**Jim** (Academic) “Also wanted to learn more from the traditional Earth observation community as well… I wanted to see what made them sort of tick … Opportunity to publish together, again, in the sort of multidisciplinary approach…’’ **Lucy** (Government) illustrated how an opportunity to support another is also an opportunity one to learn. “…we'll find a group of people who have data who think they might want to share, but they're a little nervous, and they don't know how, how do we get it into data systems? And we'll send three people there, here let's go learn!’’
Initiative-2	**Harry** (Academic) ‘’… benefit of being with others and exchanging with others and receiving, advancing if I may say, our know how, or developing together with them, advancing our research and making our solutions more useful…’’
Flagship	**Milo** (Private) ‘’we have a double gain, we gain as we can provide some information in the process, but we learn also a lot from the process.’’ **Clara** (Academic) “…us working through how to present their perspective, in the most impactful way, is one of the things that I've learned a lot from ...”

The GEO activities as a conduit learning was best described by Lucy, “the whole contributing to everyone learning about each other’’ and by Kevin who stated “I was personally challenged to find solutions that I wouldn't be able to just come up with on

my own. Having a specific project to focus on and experts that I had to support, and then explain exactly what I was doing and how we were doing it, was beneficial for me in my professional career''.

Learning was viewed as a motive across sectors, with more code occurrences in the academic and private sector, less so in the government and NGO sectors.

Visibility and recognition

Acknowledgement of our existence and belonging to a community, in particular one that increasingly gains good reputation. The data analysis shows that participants viewed the sense of belonging, visibility and recognition at community, within a scientific domain, the activity, the business to personal levels:

Community Activity	**Mateo** (Private) ''… fact that [our Activity] is there as a community activity it increases its visibility'' and ''… with GEO you will have the exposure…''. **Ezra (**Government) ''… has contributed to boost the visibility, the network of [our organisation], the visibility of its achievement … ''
Initiative-1	Illustrated visibility as a motive from different perspectives. **Peter** (Government) ''Because geo at the time was focused on the societal benefit areas, and *[our scientific domain]* was not one of them. If your name is not there, you're not at the table. This is where the impetus for *[Initiative-1]* started…'' **Jim** (Academic) ''I did feel that we're slightly underrepresented in the *[scientific domain]* …'' **Sarah** (NGO) ''My personal motivation was also in trying to get people to work together, to do something useful ...'' **Kevin** (Private) '… there was a lot of interest from people within my organisation that were asking me, "how did you get involved in a project like this? It's really, really cool. How did you do this type of work." I had a series of internal presentations and knowledge transfer, to help other individuals within the organisation or

	groups within our organisation…''
Initiative-2	Similar to Initiative-1, Initiative-2 participants had the need to have their scientific domain more visible in GEO. **Harry** (Academic) ''when we started this action, actually, there was a very limited action in GEO concerning the *[scientific domain] …''* Further similar motive was to promote the work of the organisations and individuals. **Mia** (Private) ''… to have the opportunity of the stakeholder ecosystem and the opportunity for us to provide what the industry could offer…'' **Harry** (Academic) ''… as a scientist, I want to make our work visible and useful for others. And GEO was one of the main drivers providing us this possibility …''
Flagship	At times the visibility is extended beyond the direct participants of the activity, but to the stakeholders of the activities: **Clara** (Academic) '' … there are many other partners who are reaching out to them because of this exposure that was created through this work…''

Peter further mentioned receiving an individual excellence award that he felt more acknowledged not just him but the collective effort of the group.

Voice heard

The opportunity to have one's opinion, insights, or point of view heard, understood, or have an impact, especially in a multiple stakeholder environment, with diverse backgrounds and expertise was deemed a motivation to participate in GEO. This further speaks to the collaborative and welcoming nature of the people in GEO and further supports the community network view of the participants.

Community Activity	Besides the recognition sentiments, no occurrences of voice being heard were found from this category of the case study.

Initiative-1	**Kaleb** (Academic) ‘’When you are involved in such a network it becomes easy for your voice to be heard, that is one. Two you will become part of same language, which is we need to use earth observation to address problems and your voice can be heard and you can contribute something to the process.’’ Other motivations were to raise a collective voice as **Sarah** (NGO), stated: ‘’… in doing so to bring together different organisations and activities that were kind of scattered around in GEO, and to have them come under a single umbrella and speak with one voice.’’ At the same time leadership of the activities must consciously create the space for voices to be heard, as stated by **Jim** (Academic): ‘’We recently had a full symposium with all our members, where we drew all the things that they thought we should do or not do. Everyone had an equal voice... everyone had an opportunity... And that's what we're looking at now as we evolve *[Initiative-1]* … People involved, get to see, and they get to evolve the actual programme itself rather than being somehow driven from above or being told what to do.’’
Initiative-2	The collective voice of Iniatiative-1 was also shared by **Mia** (Private) ‘’For us the motivation was to bring industry perspectives and GEO being intergovernmental partnership, impacting policy and decision making, it was critical we join… bring the voice of the industry.’’
Flagship	**Clara** (Academic), stated: highlights the inequalities related to gender: ‘’The biggest benefit is that people actually listen to me.” And then she highlighted some of the gender related inequalities: “Like the experience I had with *[a stakeholder]*. I felt like I was losing my mind. And being a woman, young, African. ... I was not big enough. I was not old enough. I was also a woman. Of course, it goes much, much deeper. Like at the International level, I'm 100% sure you've experienced this, people don't listen to you. I've learned in the last couple of years that things that I do for free, a lot of people get paid a lot of money for.’’ **Clara** (Academic) further shared how being a part of the GEO activity has changed how she is received: ‘’… being a part of *[the Flagship]*, when we have these zoom calls, and people recognise that I'm on the call, and they say, "I'm sure *[Clara]* is going to share about this...", they know who I am, and what I'm going to say is worth listening to. I think, to me, that is really important. I'm not like shouting in a vacuum.

> Having this voice is really important.''

For one's voice to be heard takes commitment and does not happen overnight, even in a collaborative environment like GEO as stated by **Kaleb** from Initiative-1:

> ''… for your voice to be heard or for your expertise to be made, it takes a while for people to understand where you're coming from. Until you get that stage where the other person from the other party would have listened, understood the issues, I don't think you can get it entirely. It is a slow process.''

5.3.3 Derived benefits

The theme explores the perceived benefits by the stakeholders. The derived benefits, together with the stakeholder motive's theme, provide insights on the aims of the research through research question 1: *What are the motives that inform multiple stakeholders to engage in co-creation of value?*

The data analysis resulted in 12 categories under the derived benefits theme. These categories are presented in Table 10. Four categories, based on high occurrences, are further discussed.

Table 10: Catogories of the derived benefit theme and GEO activity type

Categories	***sub-category***	**Community activity**	**Flagship**	**Initiative-1**	**Initiative-2**	**Overall Occurrence**
Advance science		1	1	3	3	**8**
Broaden the scope		1	1	3	3	**8**
Consensus building			10			**10**
Convening power		1		3	3	**7**
Credibility		4	21	7		**32**
Data and knowledge sharing	discoverability & usability	2	2	8	2	**14**
	open access	1	7	3	6	**17**
	sharing & exchange	8	13	13	12	**46**
Improve user uptake		7	13	9	4	**33**
Leveraging resources		5	11	4	1	**21**
Local empowerment		6	7	2	2	**17**
Market access		13	2		6	**21**
Moral support				3		**3**
New opportunities		9	4	5	9	**27**
	Overall Occurrence	**58**	**92**	**63**	**51**	**264**

Data and knowledge Sharing

The service provided by GEO is firmly based on Earth observations data, from satellite to airborne to in-situ observations. The struggle of access to data is real, be it due to cost associated with the data, or data management or infrastructure required

for timely dissemination and access. It is therefore no surprise that data and knowledge sharing, and exchange were identified as a resource that some actors bring and as a benefit by all activities.

Community Activity	**Felix** (Academic) ‘’… we have access to data sets that we wouldn't have had access to if we were working in isolation …
Initiative-1	**Peter** (Government) ‘’The US understands that we have responsibilities, to share the benefits of these capabilities, we have these satellites, or the in-situ measurements. These cannot just be tools for the US benefit, they have to be for the global benefit.’’ **Lucy** (Government) ‘’ … If you're not all sharing your data with each other, you lose part of that information. And we're trying to get all that information together, so everybody, each single researcher, student, public and decision makers can have access to a fuller picture…’’
Initiative-2	**Harry** (Academic) ‘’access to data, of course, this is another benefit’’
Flagship	**Tim** (Government) “And even at the national level I think *the GEO Flagship* has been quite successful working with countries that don't have the infrastructure to collect the basic information on production, supply and demand.’’

In addition to data sharing, it was found that the willingness of actors to share openly share knowledge was a benefit of value co-creation in a multiple stakeholder setting.

Community Activity	**Ezra** (Government) ‘’… we have an online portal to collate project documents because at the end of the projects, sometimes it is difficult to find a single document or a single data dealing with this project. We also have a lot of communication resources, nothing is hidden, everything is published ...’’
Initiative-1	**Lucy** (Government) ‘’we hold free workshops and the free study hall every week and we will travel around the world and help rescue data… we'll find a group of people who have data who think they might want to share, but they're a little nervous, and they don't know how, ‘how do we get it into data systems?’ And we'll send three

	people there, ‘here, let's go learn’.’’
Initiative-2	**Harry** (Academic) ’’I'm one of the scientists and not only me, but also my institution here, my people, that want to be open, they want to exchange with others, they want to get knowledge from the others but also give knowledge to the others... one of the big values of GEO for me, it created this philosophy of bringing, making people more open’’
Flagship	**Gareth** (NGO) ’’and all participants are very open to share. This is very important; the feeling is that nobody has interest to keep information and don't share’’ **Milo** (Private) “I believe that my officer dealing with the East Africa, with Southern Africa, when he / she participates to the discussion about status in his/her region, obviously, my officer has some knowledge sometimes more than others, sometimes he's maybe wrong compared to others. But when he engaged himself into this club of discussion, of exchange of information, there is an incredible value. So, we provide the information, but also we gain a lot of information.’’

The report on the GEO Flagship summarised the impact of open access to data as, “the community operationally produces information products from this data and our work would not be possible without open data access. In turn our community makes its information products openly available to all. Indeed, the open and transparent approach to information development and dissemination is what allows GEOGLAM to be a trusted and authoritative source of information’’ (GEO, 2020, p.14).

Credibility and Consensus Building

Mainly unique to the Flagship activity was the notion of consensus building which in turn provides the partners with credibility amongst stakeholders. The process of resource integration that is followed by the Flagship facilitates the consensus building.

Milo (Private)

> ’’And I believe that at the end of this process, the consensus that is reached by the *[Flagship]* community, every month on every country about the status of the crop, because it is not something that is only *my organisation* or only the Uganda meteorological service or others, but it's a consensus. This is big

voice.''

He further notes how the benefit of a multiple stakeholder position as alleviating political pressures that could otherwise be subjected to individual institutions

> ''But when our message is included, into a multi-agency, multi-voice document, it's much easier to pass the message… for example, it's much easier to say something when we are part of a consortium than when we are ourselves only because you know, our bosses are the countries. If I say something that may somehow disappoint, for example, politically the country, we may get immediately a reaction, a political reaction… But if I provide my information to the *GEO Flagship* circles, then the report is much more, let's say free, than a report issued by one single agency.''

The value of the consensus is not only to the actors involved in the development of the service but also to the recipients of the service, in this case, national government and development aid agencies.

Gareth (NGO) voiced this as:

> ''… This reduces the risk to have contradictory messages that then create, to the final user and decision maker, a lot of problems. You cannot say we are going to have a crisis there and from another organisation it says no, there is no problem there. So, what to do? Let's find an agreement, in my opinion, is the main added value of the *GEO Flagship*.''

In terms of credibility, the participants noted that GEO as an organisation has built a reputation that provides them and their organisations with credibility. The GEO Secretariat staff was also viewed as holding respect and authority and therefore beneficial to have them present in activity engagements.

Community Activity	**Mateo** (Private) ''With GEO you will have the exposure and it makes it also legit as you have a structure there.'' **David** (Academic) ''We get to work with GEO Secretariat member. When he asks questions on sustainability, he asks them with authority. He is fantastic.''
Initiative-1	**Jim** (Academic) ''… we can leverage the GEO name, it's good to have, it is recognised as being the authority in that area''

	This credibility is potentially driven by how the members of the community show-up and interact, if most model after **Peter** (Government): ''I'll say that as a person, that's what I try to give, be a good colleague and a good partner, whoever our colleagues are around the world, someone that other people want to work with, and feel that I bring something to the table, to be part of the solution and not part of the problem, ... then people say, "okay, I know my time won't be wasted".''
Initiative-2	
Flagship	**Clara** (Academic) shared how by being part of the Flagship provided her credibility: ''I cannot describe it, you should have seen me in this room, I [felt] I was in the right room at the right time, I had the all the answers, …. being able to say to the people at the World Bank, that I am part of [this GEO Flagship], if you look for any agriculture monitoring expert who's not a part of this group, then something is missing. I'm in one of the best remote sensing programmes in the world. I'm a part of this big community that's working towards this. You know, just that's what being part of the GEO [Flagship*]* is for me.'' According to **Tim** (Government), the GEO activities also provide much needed transparency on the information that is used for decision making: ''You need this kind of transparency in the world in order to make decisions, whether you're the World Food Programme, whether you're an individual farmer, whether you're a company, that's where [the Flagship*]*, from a national level, the groups that feed into it, or at an international level, where it's really a benefit. It brings the public good, I guess I'd say. It feels a practical niche in the world''

5.3.4 Engaged resources

This theme provides insights on the kind of resources that stakeholders bring to the table for value co-creation. It explores the aims of the research as stipulated in research question 2: *What are the resources made available by the stakeholders for integration towards value co-creation?*

The data analysis for the theme resulted 10 categories, presented in Table 11. A presentation of the categories with highest occurrences is presented.

Table 11: Categories of engaged resources theme by activity type

	Community Activity	Flagship	Initiative-1	Initiative-2	Totals
Capacity building	7	2	10	4	23
Connector and coordinator	4	1	13	11	29
Expertise	19	10	17	11	57
Funding	8	3	9	9	29
Leadership	7	5	6	2	20
Local knowledge / partnerships	10	8	3	5	26
Methodologies, platform and tools	11	1	10	3	25
Provision of infrastructure	1	5	6	2	14
Team diversity	3	3	10	9	25
Time investment	6	12	11	3	32
Totals	**76**	**50**	**95**	**59**	**280**

Scientific and technical expertise

The data indicated a diverse degree of scientific and technical expertise presented by the actors in the value co-creation process, which align with the specific fields of the Activities identified for the case study. These experts include but not limited to, oceanographers, agriculture experts, energy, climate change, forecasters, modellers, economists, market and commodity specialists, remote sensors, geospatial information experts, and others. These are applied in data collection, data management, systems development, data analysis, thematic applications development, reporting and capacity development of service users.

In addition, actors felt that they possessed additional competencies that were not as tangible as areas of qualifications but still crucial to the success of the services being co-created. As **Mateo** stated:

> ''the fact that you know how GEO works, that you are there, that you're doing activities, that you know the people, that becomes an asset in itself… people that are working in Earth observation, let's say companies, but they have no clue about GEO or GEOSS, so they're looking at how they can fill this gap. There suddenly you become a kind of expert.''

And **David** mentioned:

> ''One of the competencies and resources that we brought was this awareness of the need to think about the business model, the sustainability model, and

what sort of value propositions that might be available.''

Connector and coordinator

Coordination in a self-organising, multi-stakeholder and volunteer organisation could be a critical resource to ensure success of the service development and provision. The degree into which the Activities in the case study provide for coordination differ and the coordinator and connector functions are either at Activity level and, or at sub-activity level. Based on the activity documents, all activities have a governance structure that includes an officially appointed focal point who acts as the activity coordinators. This is supported by **Sarah** of Initiative-1:

> "My role since the beginning has been very much about bringing people together, reaching out to the groups and bringing them into the fold…in doing so to bring together different organisations and activities that were kind of scattered around in GEO, and to have them come under a single umbrella and speak with one voice."

In addition, the actors in the activities also act as connectors and coordinators, not only to increase linkages with their own activities but to grow the GEO community through connecting non-GEO people to other GEO activities.

Community Activity	**Ezra** (Government) "We are sometimes close to the authorities, the Ministry of these countries, so we sometimes try to be an interface between these countries and what is going on at the global level, and try to see how the countries can benefit from all these resources and richness from earth observation" **Mateo** (Private) "I can link the people then I say for, for instance, someone from Australia I'm working with, 'oh, you should be in GEOGLOWS', he stayed up late at night to be in one of these meetings from the US. And then he was very happy..."
Initiative-1	**Lucy** (Government) "we're very involved in trying to connect people and that's one of the things about being part of GEO, the more networks and people and resources we find out about and share our abilities so they can join us.''
Initiative-2	Mia (Private) "We are a kind of intermediary organisation that bridge with stakeholders in the decision making, with EO industry itself."

Flagship	**Clara** (Academic) "To be a medium for interested people in the work and being able to communicate."

The document analysis of the case indicated the critical role that is played by the coordinators in facilitating collaboration among the multiple stakeholders and how they form part of the institutional arrangements of value co-creation.

Local knowledge and partnerships

In addition to scientific and technical expertise, actors contributed their tacit knowledge of the local environment, in particular with regards to culture, the manner of doing business and connections with the national stakeholders. This is crucial for the development of local solutions or solutions that are suitable for the local environment.

Community Activity	**Felix** (Academic) "We bring this local knowledge and also the local connections and the local networks, the understanding of local level, which people in the north don't normally have and miss most of the time."
Initiative-1	**Lucy** (Government) "That's why we do nodes, nobody wants to talk to a bunch of strangers in some other country. They want to talk to someone who they know locally. We try to find someone local to manage their data … someone there who knows all the people. It's very important and it's much easier to get buy in and trust"
Initiative-2	**Mia** (Private) "Competencies we bring is our experience from an analytical perspective. We develop the industry surveys, or we develop understanding of the regional or national activities in Earth observation, because we have defined methodologies that are following different pillars with indicators."
Flagship	**Clara** (Academic) "We might have a really good functioning algorithm and method or data system, but then, it doesn't fit with the limitations with internet connectivity and the expertise of the people who would be the host organisation. It helps when we're developing project proposals that this context is understood really well. ... You have to think about if you really want to make change, and you really want people to embrace and work with the tools that you're developing."

Time investment

GEO is a volunteer organisation. The data showed that participants were aware of the level of time they were investing in the GEO activities, however they found that this was worth their while both from individual and organisation level. Their perceived derived value from time as a resource was presented under the Stakeholder Motives and Derived Benefits themes.

Community Activity	**Mateo** (Private) "When I started working for myself, it was something that I wanted to continue to be involved in. I had not realised that the involvement would be so intense, but that is more also because at one point you have a lot of projects that deal with GEO, but also in the time where there were no projects, I funded it myself to be at events."
Initiative-1	**Peter** (Government) "As long as the good continues to outweigh the bad, as long as the opportunities outweigh the challenge and you're making progress, it's worth investing time."
Initiative-2	**Harry** (Academic) "… the resources we have received, actually, it was the seed money, the first money for building actions in support for the support of GEO... But it is only the half of the activity for us, the other half is based on the voluntary action"
Flagship	**Milo** (Private) "Because it's time consuming … activities we are involved are monthly, and you know, monthly it's a killer… it's very costly for us in terms of time and energy. But I still believe that the gain is much more than the cost."

5.3.5 Resource integration

This theme provides insights on the integration processes and activities undertaken by stakeholders in their application of resources for value co-creation. It explores the aims of the research as stipulated in research question 3: *How are these resources integrated to co-create value?*

The process of integrating resources for value co-creation in a multiple stakeholder environment was found to be an iterative process because actors are often both providers and beneficiaries in the process. Therefore, value is co-created multiple times during the resource integration process. The overall process includes, user needs, data collection, data collation, draft assembly, consensus building, and

publication.
The user needs are established in order to determine, design and refine, the product or service to be provided by a GEO activity. The process followed by the different activities is presented under the theme User and Stakeholder Engagement.

In the data collection phase, partners in the product or service development collect data information based on their expertise and assigned roles in the activity. This may involve collection of field data and processing of satellite imagery. As **Vera** of the Community Activity outlined:

> "Different partners are offering different products and services. And some of them are being developed by our partners in Europe. For us in the African setting, the competencies have been very much with regards to the provision of the in-situ products, the validation and coordination of local activities for testing with different users and feedback collection. The European partners have been charged or involved with the development of the platform and there is a European partner that worked on the integration of all the different services and products."

The data collation phase involves the submission of collected data for integration and further analysis. The further analysis of the data could be done by other experts in the team, for example in case of modelling. This demonstrate an example of expert actors being beneficiaries. As **Milo** of the GEO Flagship stated:

> "We use much more than Earth observation to do our work, because we monitor food supply, but also food demand… like an example in a blender, all these elements like ingredients, the prices, the policies, the COVID, the war, as well as Earth observation, we put everything in a blender… I don't want to train them [my team] to become remote sensing expert… we like the division of labour. We are economists using remote sensing."

Ultimately all collected and analysed data is collated into a draft output, which could be a product, report or platform. The consensus building or demonstration phase involves the interrogation of the draft output by the stakeholders involved in the value being co-created or external stakeholders or users may be consulted. This process is predominantly done through workshops and meetings setting.
Simon of Initiative-2 provided

> “The other institution like mine had the role to build and to demonstrate this particular system and platform, so that institution would take these platforms and go to various countries and present them, and then see the response of these countries, and if they were interested in using these platforms.”

The draft output is then updated based on the feedback received either from user as is the case with product development and finalised based on decisions taken during the consensus building consultations.

Felix of the Community Activity outlines a similar process as that of the GEO Flagship in resolving and adopting the product as ready for next steps

> “We have constant interaction between partners, around the table we share ideas, and we critique, if need be, what's on the table. It's an open and transparent process that we all go through in the end to meet the objectives of the project. The transparency that ensues from the discussions and the feedback that they get, especially from those of us in the south, are taken on board and integrated in the development process.”

For the GEO Flagship, as outlined in the activity documents, the process unfolds as follows:

> “A video conference is held to jointly review the crop condition assessments and provides an opportunity to discuss the individual assessments, supporting evidence, and discrepancies, as well as to address uncertainties, and review crop condition changes relative to the previous assessment and season. Once consensus on crop conditions and drivers has been achieved, draft text and crop condition graphics are then assembled to go through a review process by all partners before being published.” (GEOGLAM, 2021)

The output is then published for user consumption and the cycle begins again for a recurring service such as the case of the GEO Flagship where the monitoring report is published 11 times a year. As **Gareth** of the GEO Flagship stipulated:

> “how the report is produced, it is consistent since five years ago, you can easily compare and it's well structured.”

5.3.6 Institutional business model

This theme explores the perceived institutional arrangements that enable co-creation

in a multiple stakeholder ecosystem. It explores the aims of the research as stipulated in all 3 research questions.

The case study organisation operates on a voluntary business model. All efforts, demonstrated in the four activities, are mainly undertaken on this voluntary bases. To maintain focus, the research had not intended to investigate the institutional arrangements required for value co-creation to occur, an aspect of value co-creation that is still nascent (Vargo & Lusch, 2017). However, in exploring stakeholder motives and perceived benefits the researcher asked the participants what would make them, or their institution stop collaborating in GEO activities. The findings from the data analysis gave an indication of the role of institutional arrangements in value co-creation, hence this theme is included.

Ownership

On hearing the question, almost unanimously the participants echoed the same exclamation of disbelief resulting in the sub-category of it being unthinkable to the participants to ever stop collaborating in GEO.

Community Activity	**Ezra** (Government) “No we have no reason to change, we have not changed our mind, we are still with GEO.” **Felix** (Academic) “I don't think we have any reason to stop collaborating on this.” **Mateo (**Private) “With GEO I cannot. Again, it is this feeling, it is this network structure.”
Initiative-1	**Lucy** (Government) “I can't imagine what they would do that makes me want to stop. I really don't.” **Kaleb** (Academic) goes as far as to compare matching interests to marriage: “If GEO refocus off my interest, and that is never going to happen. You get it. I can't, see myself not be interested in and what it is doing now… GEO will always be relevant. And GEO will have that interest and focus that I'm ready to move it. I feel, it's like marriage, you're stuck with a woman forever.” Peter (Government) on the other hand indicated the will to take on a fight if he is pressed hard on the issue: “I don't think there's anything that's ever going to happen to me personally, I'll

	fight till the bitter ends. But I would say that if I was no longer able to rally the troops, like my colleagues, and others, under the geo flag, and it didn't resonate with them, then it would be very difficult to continue. The point would be well, if I don't have fellow co-conspirators, the like-minded colleagues that believe in working together to get it done, then I have to say, "I don't want to waste time. I don't want to waste taxpayer money." I'd have to look elsewhere. But then that becomes an endless loop problem, what would lead those people to not believing anymore?
Initiative-2	**Harry** (Academic) "I don't see any special reason to stop doing what I'm doing. And I don't see for my institution or the centre national observatory any reason to stop working in GEO. Because as I told you, there are a lot of benefits. … I never thought about stopping collaborating in GEO."
Flagship	**Gareth** (NGO) "For the moment we are not going to stop. There is no reason to stop. We are going on the opposite direction; we want to improve." **Clara** (Academic) "I don't think it is possible to stop collaborating with GEO, given that you could do things that are a core interest to you, but then you can also help advance GEO mission."

Upon probing, the possible causes to stop collaboration in GEO could be retirement arrives, there is a mission

Even increased competition was deemed not be good enough a reason to leave GEO as **Kevin** of Initiative-1 said:

> "I don't know if that would actually happen... It would have to be something very drastic to happen in order for us not to try to work with GEO to solve some of these different problems or collaborate with GEO. We've seen different software competition come and go through the years and we've still stood beside Geo and supported them, so wouldn't be anything like that. And along with that, there's been a lot of changes in geo, there's always changes with the different board members and the different presidents. We've been there through all that. So, I don't think we would stop supporting Geo at any point in time, it it's in our core values, as a company to have these types of initiatives to support. And I'm like, everything changes so we would work through it together."

In the event something drastic occurs, such as changes in mission focus by GEO, there was still no throwing of the towel, rather participants would be prepared to fight the battle from within GEO. **Kevin** of Initiative-1 recalled that changes had occurred in GEO before, and that had never deterred their commitment:

> "… there's been a lot of changes in GEO, there's always changes with the different board members and the different presidents. We've been there through all that. So, I don't think we would stop supporting GEO at any point in time, it's in our core values as a company to have these types of initiatives to support. And I'm like, everything changes so we would work through it together."

5.4 Summary and conclusion

This chapter presented the research findings from the data analysis. It captured the identified 6 themes from the inductive and deductive coding undertaken. Having collected the data, followed by the immersion during transcribing and data analysis, it would seem that one of the some of the institutional norms and practices that GEO has established is the culture of shared purpose, a sense of belonging and having fun together. These are well illustrated by the information learnt from the participants: **Clara** exclaimed:

> "… why would I leave when there's like, potential to impact not only decisions, but there's potential to develop the capacity of students, encourage them to want to be a part of this. People who work in ministries gain a lot more skills, and they're more marketable, you create opportunities for them to be a part of a global community. For now, it makes the most sense to just keep doing this. Wow, unless I can figure out a way of helping more people."

As **Mateo** stated "… it is this feeling, it is this network structure… its all about the people" of which Peter agreed:

> "But I would say that if I was no longer able to rally the troops, like my colleagues, and others, under the GEO flag, and it didn't resonate with them, then it would be very difficult to continue. The point would be well, if I don't have fellow co-conspirators, the likeminded colleagues that believe in working together to get it done, … then I'd have to look elsewhere."

And **Jim** concluded with:

> "It has to be enjoyable. If it stops being enjoyable, I'll probably stop doing it… from a personal perspective, everyone's time is precious. I don't think they want to

contribute their time if it's not enjoyable. It can be informative, and that's great, it can continue to be informative, and not be enjoyable. For me, it'd be much better if it was enjoyable. I think the reason most people enjoy things is if they're a part of it, and that they have an impact upon what they're part of."

Chapter 6: Discussion of Research Findings

6.1 Introduction

In the previous chapter, Chapter 5, comprehensive findings from the data collected through in-depth interviews, case documents and observations were presented. The data collection and analysis focused on the case of an Intergovernmental Organisation, the GEO. The research findings were presented through six themes, developed through an inductive coding process. The themes were used to gather evidence to address the research aim of understanding why and how multiple stakeholders collaboratively brought their resources together to co-create value. The research problem was explored through three research questions, that are:

> ***Research question 1****: What are the motives that inform multiple stakeholders to engage in co-creation of value?*
> ***Research question 2:*** *What are the resources made available by the stakeholders for integration towards value co-creation?*
> ***Research question*** *3: How are these resources integrated to co-create value?*

In this chapter, the research questions and results are discussed, compared and contrasted against the existing literature that was reviewed in Chapter 2. This is done to extend our understanding of the motivations of multiple stakeholders engaged in resource integration for value co-creation, and hence aims to contribute to the body of knowledge. The discussion will follow along the lines of the main major themes from the findings chapter and a model for value co-creation in knowledge generation for societal benefit is presented and discussed.

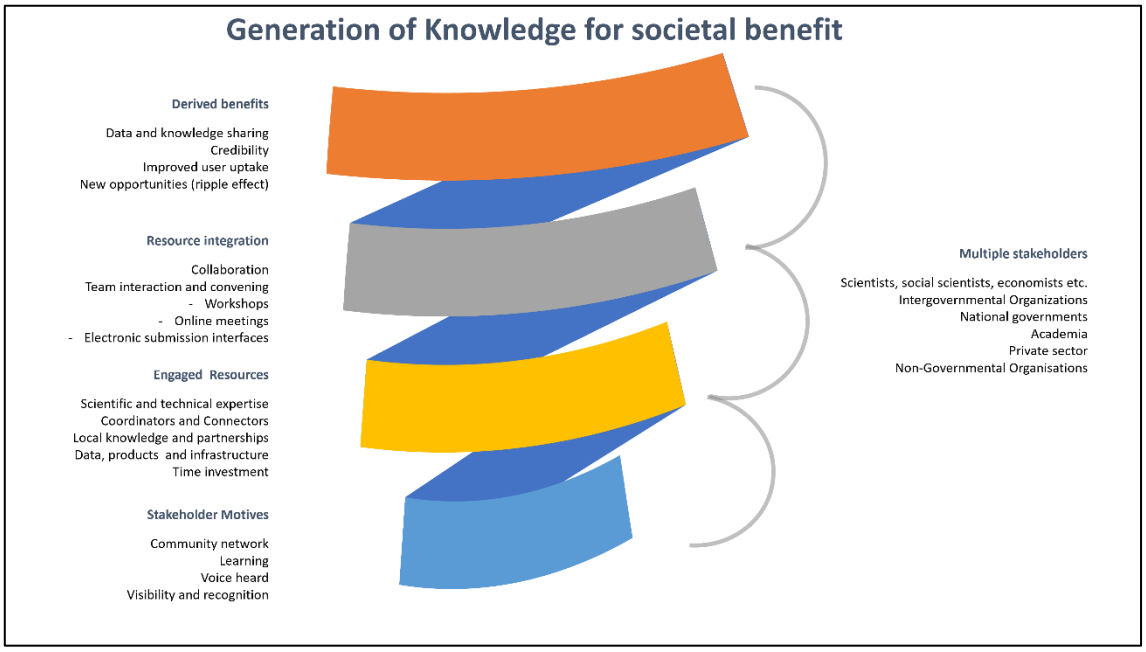
6.2 Addressing the research questions

6.2.1 Understanding value co-creation

To understand the motivations that drive actors to co-create value in a service ecosystem it was important for the research to first establish that the participants recognised that value co-creation was occurring in GEO. The focus of value co-creation was determined by the researcher from the review of the organisation documents. According to Razmdoost et al. (2019) focusing on a specific objective

enables identification of resource integration processes. Recalling the mission statement for the case, “unlock[ing] the power of Earth observations by facilitating their accessibility and application to global decision-making within and across many different domains” (GEO, 2015b, p.5). This means turning Earth observations data into information and knowledge for evidence-based decision making is illustrated in Figure 1. The focus of value co-creation in the case was hence defined as ‘generation of knowledge for societal benefit’. The findings of the data analysis are depicted in the derived model presented in Figure 5Figure 2.

Figure 5: A model for understanding value co-creation in knowledge generation



Source: Authors own

The spiral diagram indicates the dynamic nature of a service ecosystem, the interchangeable role of stakeholders as resource providers and beneficiaries (Vargo & Lusch, 2017) and the requirement for both motives and resources to drive resource integration (Findsrud et al., 2018b). The resource integration process yields new resources or outcomes (Peters, 2016), depicted as derived benefits in the model. The elements are described in the following sections of the chapter.

6.2.2 Stakeholder engagement

The document and interview analysis findings indicated a diversity of stakeholders or actors involved in the case, all involved in resource integration, and service-to-

service exchange occurs amongst the multiple stakeholders. This affirms literature stating that at the core of value co-creation is the notion that all stakeholders in the service ecosystem are resource integrators (Reypens et al., 2016; Vargo & Lusch, 2017). The participants were engaged in their understanding of the existence of their co-creating. All the participants indicated the existence of co-creation in their activities, though the perspective on the level of co-creation maturity differed between participants, at times of the same activity.

End-user or customer engagement was identified as the cornerstone of value co-creation by all participants. It has been acknowledged in literature that co-creation involves customer participation in various stages of production and use processes through the application of operant resources such as knowledge, skills, and effort (Sugathan et al., 2017). Some participants stressed how they view themselves as users in the activity, specifically as users of the resources generated by the Earth observation scientists in the activity. Important to note is that in most instances these stakeholders were using new resources, therefore deriving value-in-use, which in turn they used for further resource integration. Stakeholders who view themselves as providers in the value co-creation process define the resources from end-users as knowledge provided through a dynamic and interactive engagement for formulation of user needs and feedback on the usability of solutions.

The maturity level of the end-user stakeholders, understood as readiness for uptake, which is influenced by a number of factors such as policy and competencies, was noted as a key consideration due to its potential to impact the effort actors assign to resource integration and the success of value co-creation. The extent of the literature on this aspect of stakeholder engagement is unclear beyond the exploration of willingness of service users to engage undertaken in the health care context (Hardyman et al., 2019) and actor willingness from a motivation perspective (Findsrud et al., 2018b). The learning motivation and capacity development resources were identified as possible mitigating factors.

Lastly, this research found an appreciation of value co-creation as central to organisations achieving sustainability, with user engagement at the core of achieving that sustainability. This appreciation aligns with the suggestion that value co-creation is about improving mutual wellbeing of stakeholders through service provision

(Wilden et al., 2017). The inclusion of national and local governments as stakeholders in the model, in particular viewed as end-users of the generated knowledge, brings to fore the argument that through co-creation rather than co-production, value for the end-user is created in a dynamic and interactive manner (Osborne, 2018). To bridge the gap created by the end-user maturity and to improve uptake of the service, the stakeholder engagement includes fostering ownership by end-users through various capacity development programmes.

6.2.3 Contributed resources

The discussion on the research finding on resources will focus on five of the identified resources to answer the second research question: *what resources are made available by the stakeholders for integration towards value co-creation*?

Scientific and technical expertise

The competencies of the stakeholders were identified as the dominant resource contribution. The findings indicated stakeholders or actors to be resources themselves, providing their expertise (skills, knowledge and experience) for utilisation in the resource integration process by other actors, therefore creating new resources and value. This builds further to Vargo and Lusch (2017) who state that all actors are resource integrators in the service ecosystem. The diversity of the required scientific and technical expertise is recognised by the GEO mission in its stipulation of “within and across different domains” (GEO, 2015b, p.5).

Data, products and infrastructure

The basis of the focus on knowledge generation derives from the transformation of data into products, information and knowledge. Data in the case refers to space (satellite), airborne and in-situ observations as well as socio-economic data (such as those collected by National Statistics Offices) that are provided by actors for further integration to generate knowledge for informed decision making. The products refer to value-added datasets derived from the raw data, and the infrastructure refers to the methodologies, tools and platforms provided towards the development of decision support tools. All these resources are operand resources as defined by Vargo and Lusch (2017), operand resources are tangible resources owned by the actors.

The research findings indicated that data and knowledge are the fundamental resources for all the activities in the case. Data as an operand resource, requires the application of knowledge, an operant resource, to be transformed into products and information, therefore a new resource and value. This application of an operant resource to an operand resource is supported by Findsrud et al. (2018) in the positioning that without the application of operant resources, operand resources have no value. Data and knowledge sharing is further discussed later, under the derived benefits, highlighting the value contributed to these resources for knowledge generation by the participants in the case.

Local knowledge and partnerships

In addition to scientific and technical expertise, actors contribute their tacit knowledge and experience of the local environment, in particular with regards to local and national development priorities, local challenges that could impact adoption, culture, the manner of doing business and existing partnerships with the local stakeholders. This is crucial for the development solutions that are suitable for the local environment. According to Razmdoost et al. (2019) the previous experiences of the stakeholders are manifested in their knowledge and competencies. This local expertise resource was viewed important for establishing trust with local stakeholders as well as facilitate ownership by the local stakeholders. This context-based knowledge also extends to the knowledge of the organisation, GEO, which enables other actors to offer advisory service and links with the role of being a connector as a resource.

Coordinators and connectors

Service ecosystems are defined in the S-D logic as self-governing in addition to being resource-integrating (Vargo & Lusch, 2016). The role of coordinators to bring together actors and the ability of actors to connect other actors together was defined as a resource, in particular due to the voluntary nature of the organisation. The coordinators play an important role in resource integration as they tend to have an overview and oversight of the resources available for the service offering. Further, because of the institutional arrangement in place, coordinators have the respect of the actors and have the ability to influence leveraging of additional resources. The authority of the coordinators is important to influence the self-adjusting nature of the service ecosystem as a dynamic network and hence may re-direct the application of

resources. The document analysis of the case indicated the critical role that is played by the coordinators in facilitating collaboration among the multiple stakeholders and how they form part of the institutional arrangements of value co-creation.

Various theoretical perspective have been suggested to understand how multiple stakeholders coordinate value co-creation (Kelleher et al., 2020). The role played by all actors to connect and increase participation of actors to their own activities or other GEO activities, speaks to the dynamic nature of the actors as resource integrators. The participants viewed themselves as intermediaries, bridging the gap between their personal and organisation networks and GEO. The coordinators and connectors are further referred to in the motives section as an example of operationalised intrinsic motivation in accordance with the positioning by Findsrud et al. (2018).

Time investment

The voluntary context of the case requires time investment by the stakeholders be a fundamental resource to the service provision (Fontaine, 2013). The discussion that follows in the subsequent section on stakeholder motives provides additional clarity on time as a resource. Because, while stakeholder expertise can be improved through learning, the amount of time invested is dependent on individual motivation (Sugathan et al., 2017).

6.2.4 Stakeholder motives

The discussion of the research findings under this theme addresses the first research question: *What are the motives that inform multiple stakeholders to engage in co-creation of value?*

Findsrud et al. (2018) argue that simply knowing about the operant resources of the actors, without understanding the motivation is not enough to explain how resources are integrated and therefore value co-created by the multiple stakeholders. The authors further suggest that motivation is critical to understanding how and to what extent stakeholders utilise their expertise and leverage those of others for resource integration and value co-creation.

The value co-destruction school of thought argues that value creation may suffer due

to misuse of resources during resource integration (Yngfalk, 2013). In the case it was found that alignment in strategy and mission between GEO and the stakeholders provided for a common goal between the actors, which provided for congruence in the actor interactions. This supports the assumption made in S-D logic by of an interdependency between the actors who share a common mission (Vargo & Lusch, 2016). And it further makes a provision for the important role played by goal setting motivation in resource integration and value co-creation as it provides direction (Findsrud et al., 2018b). Other aspects of motivation provide for intensity and persistence, referring to the level of effort and sustained behaviour, respectively (Findsrud et al., 2018b).

Two general orientations of motivation are found, extrinsic and intrinsic motivation. These are differentiated in that intrinsic motivation is informed by fun and enjoyment of the activity itself, with no expectation of external reward or loss, which is the case with extrinsic motivation (Findsrud et al., 2018b). However, some activities may at first glance appear to be motivated by external rewards whereas the actual undertaking of the activity might be driven by intrinsic motivation (Malik et al., 2019), as is suggested to be the situation with coordination and community building in the case.

The research found six key stakeholder motivations, these being: learning; visibility and recognition; voice being heard; science for societal benefit or greater good; and community network.

Learning

Continuous learning, whether for research and development or for improvement of business processes and practices is fundamental to delivering fit for purpose products and services. The data on the motives of the stakeholders supported this sentiment and indicated an alignment amongst the activities on the value of combined or shared learning through individual competencies that are brought into the collaborative spaces.

Visibility and recognition

Acknowledgement of our existence and belonging to a community, in particular one that increasingly gains good reputation. The data analysis shows that participants

viewed the sense of belonging, visibility and recognition at community, within a scientific domain, the activity, the business to personal level. Aligned to the literature findings by Pera et al. (2016) that the ecosystem network provides stakeholders with an opportunity to make individual identity more visible.

Voice heard

The need to make ones identity visible, “despite conflicting agendas and values within the multi-stakeholder ecosystem” (Pera et al., 2016, p.4036), is facilitated by the ecosystem environment. The opportunity to have one's opinion, insights, or point of view heard, understood, or have an impact, especially in a multiple stakeholder environment, with diverse backgrounds and expertise was deemed a motivation to participate in GEO. This further speaks to the collaborative and welcoming nature of the people in GEO and further supports the community network view of the participants. The research findings recognised the high level of commitment required for an individual or a group to have their voice heard and have ideas and insights recognised.

Science for societal benefit

The altruism aspect of motivation theory is appearing strongly in this motivation as stakeholders show a greater concern of others and the environment. The idea of contributing to a greater good and making the world a better place, drives the behaviour of the stakeholders, corresponding to altruism motivation, a concern for others more than oneself (Poch & Martin, 2015).

Community network

This motive supports the value stakeholders place on actors as a resource and resource integrators in the generation of knowledge for societal benefit. The relationships between stakeholders and the sense of community belonging are motives behind this theme. The community network is a further source of information for resource mobilisation, market access though meeting stakeholders that would not normally be accessible to the actors, leveraging resources beyond use in current activity (Pera et al., 2016), and as a source of information on current state of affairs in the organisation and field of discipline. The source of information aspect was associated with the learning motive.

Considering the institutions of the organisation, the coordinators respond well to this stakeholder motivation as their official task is strengthening the community networks. Evidence presented in Chapter 5 from the participants alludes to the operationalisation of intrinsic motivation through this task being done by coordinators because of enjoyment not just the extrinsic reward or loss of work or role. This view is supported by Malik et al. (2019), they suggest that enjoyment of a task aligns with intrinsic motivation which results in behaviour driven by increased effort and persistence.

6.2.5 How are the resources integrated to co-create value?

To achieve value co-creation with multiple stakeholders in a service ecosystem, a process of bringing together the stakeholder motives and resources is required. Two most salient resource integration processes identified were collaboration and team convenings or interaction. This section forms a response to the third research question: *How are these resources integrated to co-create value?*

Team interaction and convening

Interactions among multiple stakeholders are deemed a fundamental building block of value co-creation in service ecosystems (Kelleher et al., 2020). The research found that team interactions were carried out through direct and indirect integration mechanisms, of which three were found to be most recurring i) physical and online workshops, symposia and side events at major conferences; ii) online submission interfaces for collation of input resources from stakeholders and iii) regular teleconferences aimed at addressing discrepancies and building consensus on final outcomes prior to publication. These findings correspond to those by Razmdoost et al. (2019), who found value co-creation does not only occur through direct interactions, rather it also occurs through multiple stakeholders integrating resources in the service ecosystem indirectly, such as the online input interfaces used by the GEO activities.

The team interaction was found to be supported by clarity of roles, where all actors are assigned tasks. The assigned tasks vary depending on the context of the service and are linked to the competencies of the actors or areas of learning objectives of the actors.

6.2.6 Derived benefits

The derived benefits or outcomes of the value co-creation further feed the motivations. The findings indicate that the motivations of the actors have not changed over time, rather stakeholders have intensified their efforts, due to realised benefits.

Four major categories of derived benefits are presented in the model in Figure 5, those being, data and knowledge sharing, improved user uptake, new opportunities and credibility.

Data and knowledge sharing

As mentioned under the engaged resources, the provision of data and knowledge is viewed as a critical resource by the multiple stakeholders. What informs this to be a derived benefit is the willingness of actors to openly share and transfer knowledge, particularly through collaborations as a resource integration process to be discussed in the next section. In addition, the struggle for open access to data is real, be it due to cost associated with the data, or data management competencies or infrastructure required for timely dissemination, access and use. This outcome recognises the contribution GEO is making to the call by the United Nations on the SDG's Agenda for access to reliable and timely data (United Nations, 2015).

Credibility

Mainly unique to the flagship activity type, which according to organisation practice is required to have a policy mandate. The policy mandate for the sampled flagship activity is provided by the G20. Trustworthiness of the service is therefore paramount. This further extend to provide credibility to individuals and organisations involved in the activity. The credibility is a result of the activity having recognised international experts and organisations and applying a team interaction process to integrate resources though a consensus building mechanism.

Improved user uptake

As stated, ultimately value co-creation is about achieving wellbeing of all actors (individuals and organisations). End-user uptake and value use of the service is paramount. The organisation focus on global grand challenges and engagement with policy makers has raised awareness of the value of the service provided and hence the organisation, GEO, is viewed to play a critical role in improving the uptake of

value proposition of the involved service providers.

New opportunities

The ripple effect of the success of value co-creation as a spin off from one activity to the next was found to be an outcome of resource integration. Examples of this include adopting lessons learnt or achievements of other organisations or countries into one's organisation or country.

6.2.7 Institutional model

As shown in the discussion of coordinators and team interaction above, institutions and institutional arrangements broadly depict the coordination of value co-creation among actors at the individual and organisational levels in service ecosystems (Kelleher et al., 2020). This aligns with axiom 5 of S-D logic, which states that "value creation is coordinated through actor-generated institutions and institutional arrangements" (Vargo & Lusch, 2016, p.8). Such institutions and arrangements include meanings, beliefs, rules, norms, laws, and practices as well as their interrelations.

6.3 Summary and conclusion

The model focused on motivation drivers for value co-creation in knowledge generation for societal benefit and provides a representation of the dynamic network of stakeholders, the interdependency between motives and resources for resource integration and value co-creation. Through the discussion of the model and the themes of the research findings the three research questions were answered. The chapter further presented the resources, motives and the resource integration process and mechanism applied in the case for value co-creation.

The presented model, focused value co-creation in the case on knowledge generation for societal benefit, and through the discussion of the model and the themes of the research findings the three research questions were answered. The model provides a representation of the dynamic network of actors, the interdependency between motives and resources for resource integration and value co-creation. The chapter further presented the resources, motives and the resource integration process and mechanism applied in the case for value co-creation.

The next chapter will summarise the findings of the study and its implications for research and business.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

Following the presentation of the research findings in Chapter 5, Chapter 6 of this report discussed the research findings. This chapter concludes the study by reflecting on the purpose of the research, the principal findings, implications for research and management. It further presents limitations of the study and future research areas.

7.2 Reflecting on the research problem

The purpose of the study is to gain better understanding of the motivations that drive multi-stakeholders in service ecosystems to participate in resource integration practices for value co-creation. The research explored the research aim through the following research questions:

> *1: What are the motives that inform multiple stakeholders to engage in co-creation of value?*
>
> *2: What are the resources made available by the stakeholders for integration towards value co-creation?*
>
> *3: How are these resources integrated to co-create value?*

The research objectives were explored through the context of a case of an Intergovernmental Organisation, the GEO. A qualitative research methodology was conducted with multiple data collection instruments (semi-structured interviews and organisation documents) utilised. The research sample comprised of 18 participants from government, private, academic and NGO sectors. The participants further belonged to four GEO Work Plan activities, that were used for within case analysis.

7.3 Principal findings

The research findings presented in Chapter 5 and the discussion in Chapter 6 have suggested the following findings:

- The research findings affirmed that value is co-created by multiple stakeholders with a beneficiary present. All participants indicated the need and role of end-user stakeholders in value co-creation.
- The salient and most recurring resources provided by multiple stakeholders for co-creation of value, in the case of GEO and context of knowledge

generation for societal benefit were, identified as scientific and technical expertise; data, products and infrastructure; coordinators and connectors and time investment.

- The research found six key stakeholder motivations that drove resource integration, these being, learning, visibility and recognition, voice being heard, science for societal benefit or greater good, and community network. These spoke to relationships, caring for others more and identity being visible. The interdependency between intrinsic and extrinsic motivations was noted with altruism motivation highlighted as being a driver for some of the stakeholders.
- The process of integrating resources for value co-creation in a multiple stakeholder environment was found to be mainly driven by an iterative process because actors are often both providers and beneficiaries in the process. Therefore, value is co-created multiple times during the resource integration process.
- The research identified direct and indirect team interaction mechanisms that enabled resource integration. These being workshops, regular online meetings and online input interface systems.

7.4 Theoretical contribution

The research contributes to academic literature in the field of value co-creation with motivations that drive multiple stakeholders to contribute resources and willingly participate in the integration of those resources for value creation.

The research findings have contributed to narrow the gap in academic studies highlighted by Pera et al. (2016) with regard to the need to focus research on multiple stakeholder motivations, building on the traditional focus on consumer motivations to co-create value. The research also contributes in the call for increased academic focus on stakeholder integration, an area identified as under-developed by Hillebrand et al. (2015).

In addition, the research touched on the call by Osborne (2018) for conceptualisation of value co-creation in the public service. GEO as an Intergovernmental Organisation, its institutions and governance are informed by the public sector and ultimately aims to provide a service to governments. The model presented in Chapter 6 provide insights of how value co-creation could be perceived in service ecosystems

driven by supporting public service.

7.5 Managerial implications

The research findings provide managers with an improved understanding of the motivations that drive and guide multiple stakeholders in their resource integration processes when co-creating value for themselves, their organisations and others.

Psychological traits such as motivation are unique to each stakeholder, managers would benefit from obtaining insights into the different motivation drivers and assigned importance by the stakeholder, and to leverage these to improve stakeholder engagement.

Likewise, value is uniquely determined by each stakeholder, applying insight gained from motivation drivers for resource integration, organisations can facilitate the design of institutions and institutional arrangements that promote their value proposition to the unique circumstances of the stakeholders.

7.6 Research limitations

The research has the following limitations.

- Though important elements of this research have relevance for and could be transferred to other multiple stakeholder service ecosystems, generalisability of the findings to other organisations of similar nature is limited by the single case research design.
- Whilst the research had a variety of stakeholders and a rich sample, more participation of the stakeholders commonly referred to as end-users or policy makers would have added more value to the study. Despite this limitation the study had sufficient stakeholders who viewed themselves as end-users in the service-to-service exchange.
- The semi-structured interviews enabled the research to explore the stories of the participants, however respondent bias is inherent in exploratory research

7.7 Suggestions for future research

The following recommendations are made for future research:

- The research focused on a single case study and having identified key motivation drivers, resources and resource integration processes in multiple

stakeholder dynamic ecosystem, there would be added value in replicating the research in other environments with similar characterises as this research.

- The research would benefit from a longitudinal study, exploring stakeholder experiences over long-term to better understand impact of behaviour changes by stakeholders to their motivations, their learning processes and sustainability of perceived value over a long period of time.
- The research would benefit from in-depth exploration of the institutions and institutional arrangements that foster resource integration in multiple stakeholder service ecosystem, in particular, the self-regulatory nature of intergovernmental organisations with non-legally binding statutes.

7.8 Concluding remarks

The intention of the research was to gain better understanding of the motivations that drive stakeholders, in multi-stakeholder contexts, to participate in resource integration practices for value co-creation. The research objectives of why and how multiple stakeholders co-create value were explored through the context of a case of an Intergovernmental Organisation. The exploration highlighted the importance of motivation drivers such as building and access to community networks, learning together and visibility of individual identity. The application of knowledge as an operant resource to data, an operand resources, was recognised. Direct and indirect team interactions were highlighted as applicable resource integration practices. Credibility through consensus building proved to be an outcome crucial to the organisation's value proposition. A model of the findings on value co-creation in knowledge generation for societal benefit has been created. The research identified the key resource integration practices based on direct and indirect team interaction. The insights in these motivation drivers should assist managers improve their approach in stakeholder engagement and positioning their value propositions.

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Appendix A: Interview guide

The focus of the investigation, why and how multiple stakeholders in ecosystems co-create value, will be operationalized through semi-structured interviews, individually adapted according to the type of stakeholder to be interviewed.

Interview protocol:

The researcher will

- Greet the interviewee and introduce the research.
- inform them the interview is being recorded for the purpose of transcribing and data analysis.
- Highlight elements of the consent form and confirm that it has been signed by both parties.
- Inform the participant to respond to the questions from two perspectives (as appropriate), i) as a representative of his / her institution (GEO Member / Participating Organization / Associate) in GEO and ii) from personal viewpoint and experience.
- Before we begin, do you have any questions?

Background

1. I understand you participate in the [GEO Activity], how long have you been a participant in the activity and how did your participation come by?
2. GEO advocates for co-creation and co-design, how would you describe value co-creation in your GEO activity?

Resource integration

3. What are the competencies and resources that you and your organisation bring to the GEO activity?
4. How are these competencies and resources complementary to those of other stakeholders in the activity?
5. How would you describe how these resources are integrated to form the GEO activity service and value co-creation?
6. What are the resources offered by GEO?

Motives

7. Why did you and your institution decide to join GEO and participate in this GEO activity?

8. Have any of those reasons changed over time? If yes, why, and how?
9. What have been the benefits to you and your institution in participating in GEO activities?
10. What would make you and your institution stop collaborating in GEO activities?

Appendix B: Consent form

I am currently a student at the University of Pretoria's Gordon Institute of Business Science and completing my research in partial fulfilment of an MBA. I am conducting research on value co-creation and am trying to find out more about the motives of actors for integrating resources in value co-creation. Our interview is expected to last about an hour and will help us understand what motivates the various stakeholders that contribute to the activities of the Group on Earth Observations Work Programme.

Your participation is voluntary, and you can withdraw at any time without penalty. By signing this informed consent document, you also give me permission to audio-record the interview.

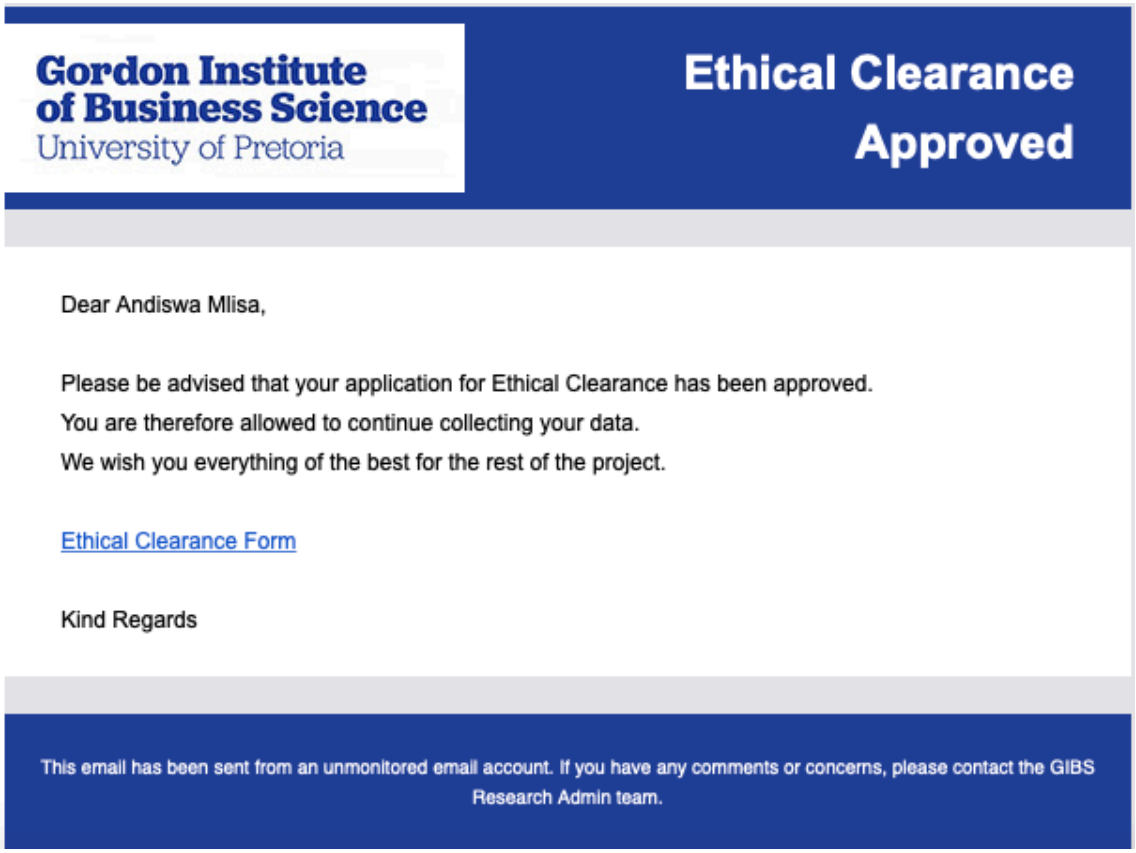
Please be assured that all data will be reported without identifiers, preserving confidentiality. If you have any concerns, please contact me or my supervisor. Our details are provided below.

Researcher Name:	Research Supervisor Name:
Email:	Email:
Phone:	Phone:

Signature of participant:_____ Date:_____

Signature of researcher: _____ Date: _____

Appendix C: Ethical clearance



Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear Andiswa Mlisa,

Please be advised that your application for Ethical Clearance has been approved.
You are therefore allowed to continue collecting your data.
We wish you everything of the best for the rest of the project.

Ethical Clearance Form

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

Appendix D: Code book

The development of coding is illustrated in this code book.

Code	Grounded	Code Groups
* co-creation push factor	4	User and Stakeholder Engagement
* co-creation: institutional experience	8	User and Stakeholder Engagement
* co-creation: nascent	10	User and Stakeholder Engagement
* co-creation: obvious	20	User and Stakeholder Engagement
* resource integration	19	Resource integration
advance science	10	Derived Benefits
broaden the scope	12	Institutional Model Derived Benefits
business model	22	Institutional Model
capacity building	32	Engaged Resources
challenge on motives	3	Stakeholder Motives
collaboration	48	Derived Benefits
commitment from end users	5	User and Stakeholder Engagement
community network: convening power	12	Stakeholder Motives
community network: increase linkages	47	Stakeholder Motives
community network: keep abreast	12	Stakeholder Motives
community network: relationships	16	Stakeholder Motives
community network: resource mobilisation	10	Stakeholder Motives
competition	1	Institutional Model
connector and coordinator	39	Engaged Resources
consensus building	14	Stakeholder Motives
consistant process	2	Resource integration
convening power	10	Derived Benefits
credibility	28	Derived Benefits
cultural diversity	5	User and Stakeholder Engagement
data and knowledge integration	41	Resource integration
data and knowledge sharing	36	Derived Benefits
ethics	1	Institutional Model
Expertise	57	Engaged Resources
final product	7	Resource integration
formulate user requirements	38	User and Stakeholder Engagement
fun and passion	19	Stakeholder Motives
funding	34	Engaged Resources
future involvement: adding value	10	Institutional Model
future involvement: changes in business model	14	Institutional Model
future involvement: increase engagement	10	Institutional Model
future involvement: mission & vision alignment	9	Institutional Model
future involvement: retirement	2	Institutional Model
future involvement: unthinkable to stop	16	Institutional Model
improve user uptake - limit confusion/data translation	35	Derived Benefits
Inequalities	9	Institutional Model
institution awareness	32	Institutional Model
join disciplines	3	Resource integration
leadership	22	Engaged Resources
LEARNING	0	Stakeholder Motives
learning: combined know how	24	Stakeholder Motives
learning: meeting user needs	7	Stakeholder Motives
learning: processes and practices	9	Stakeholder Motives
learning: resource mobilisation	5	Stakeholder Motives
leveraging resources	27	Derived Benefits
local empowerment	20	Derived Benefits
local knowledge / partnerships	28	Engaged Resources
market access	24	Derived Benefits
methodologies, platform and tools development	33	Engaged Resources
moral and willingness to support	3	Derived Benefits
new opportunities	28	Derived Benefits
open access to data and knowledge	44	Derived Benefits
provision of infrastructure	14	Engaged Resources
reduce duplication	8	Stakeholder Motives
respected international experts	10	Derived Benefits
role clarity	9	Resource integration
science for societal benefit	48	Stakeholder Motives
stakeholder trust	1	User and Stakeholder Engagement
strategy, mission, vision alignment	34	Institutional Model
structured competencies	1	Resource integration
Team diversity	30	Engaged Resources
team interaction / convening	12	Resource integration
time investment	32	Engaged Resources
user and stakeholder engagement	55	User and Stakeholder Engagement
user maturity - level of experience / willingness	7	User and Stakeholder Engagement
validation	1	Resource integration
visibility and recognition	28	Stakeholder Motives
voice being heard	20	Stakeholder Motives
volunteerism	20	Institutional Model