Investigating perceptions of stakeholders' positions, activities and specialisations at a serious game interest area (NWU, Vaal)

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PREFACE

"Game Design is about people. Almost all methods of game design execution are about the interaction between imperfect people who create imperfect processes and plans. You can't change human nature, but you can learn how to overcome it and succeed." **– Andrew Dotsenko, 2016**

ABSTRACT

The following study profiles the stakeholders in the context of serious game (SG) design and development. This interpretivist research is done to contribute towards a contemporary, integrated, stakeholder-centred framework for the creation of SGs at higher education (HE) institutions in South Africa. As a specific case study, North-West University (NWU) is used as a relevant example due to the amount of SG work that has been done and continues to be done in this context. Despite multiple prevailing SG design frameworks, no existing taxonomic systems focus on the individuals who are impacted by and have an influence on SG design projects. Such a gap necessitates the classification of all SG interest groups. No formal classifications currently exist for persons involved in developing games intended to do more than solely entertain—especially in the HE space. The circumstances and stakeholders which formed part of the serious games interest area called the "Serious Games Institute of South Africa" (SGI-SA) at NWU are studied by way of electronic surveys to obtain qualitative data. Relevantly, the stakeholder structure of SGI-SA from 2011 to 2018 was similar to that of an independent video game development studio, with multiple NWU employees requiring a blend of competencies to embark on SG development and publishing activities. Members of the now-defunct interest area had a blend of proficiencies ranging across the breadth of stakeholder positions and activities typically seen in the video games industry.

In order to devise a contemporary cataloguing of SG stakeholders, the researcher distinguished between existing demarcations of stakeholders as they are found in game design, computer science and stakeholder relationship management literature—within the broader computer science and corporate communication corpus (and in existing SG development teams). In developing a lens for viewing SG stakeholders, the researcher firstly gathered, organised and codified existing stakeholder positions, activities and specialisations in the literature. This was done to collate the stakeholder makeup of game development teams and to clearly profile stakeholders for SG design. Secondly, the complex procedures involved in SG design were unpacked to add value to the emerging classifications. Thirdly, the researcher studied the roles of these newly categorised project collaborators, associates and contributors resulting in contemporary classification categories for these interest groups. Fourthly, the implications of the formulated SG design categories to address communication issues found in SG development are presented. Finally, the cohesion required from such interest groups to produce not only fruitful serious game media but cultivate environments in which organisation-stakeholder partnerships thrive, is discussed.

Keywords: community of practice, corporate communication, corporate taxonomy, design framework, game-based learning, game development, management framework, interest area, serious games, stakeholder theory

DEDICATION

I dedicate this work to my incredible wife, Robyn. Thank you for seeing me through the darkest of days. I love you!

To my parents. Thank you for raising me to aspire to be and do more. You have marked my life indelibly.

Moreover, a nod is reserved for my brother—Byron—for his encouragement and friendship.

A special word of thanks also goes out to my supervisors, Professor Venter and Mister Greeff. I appreciate your words of encouragement throughout this time. I sincerely value your support and guidance.

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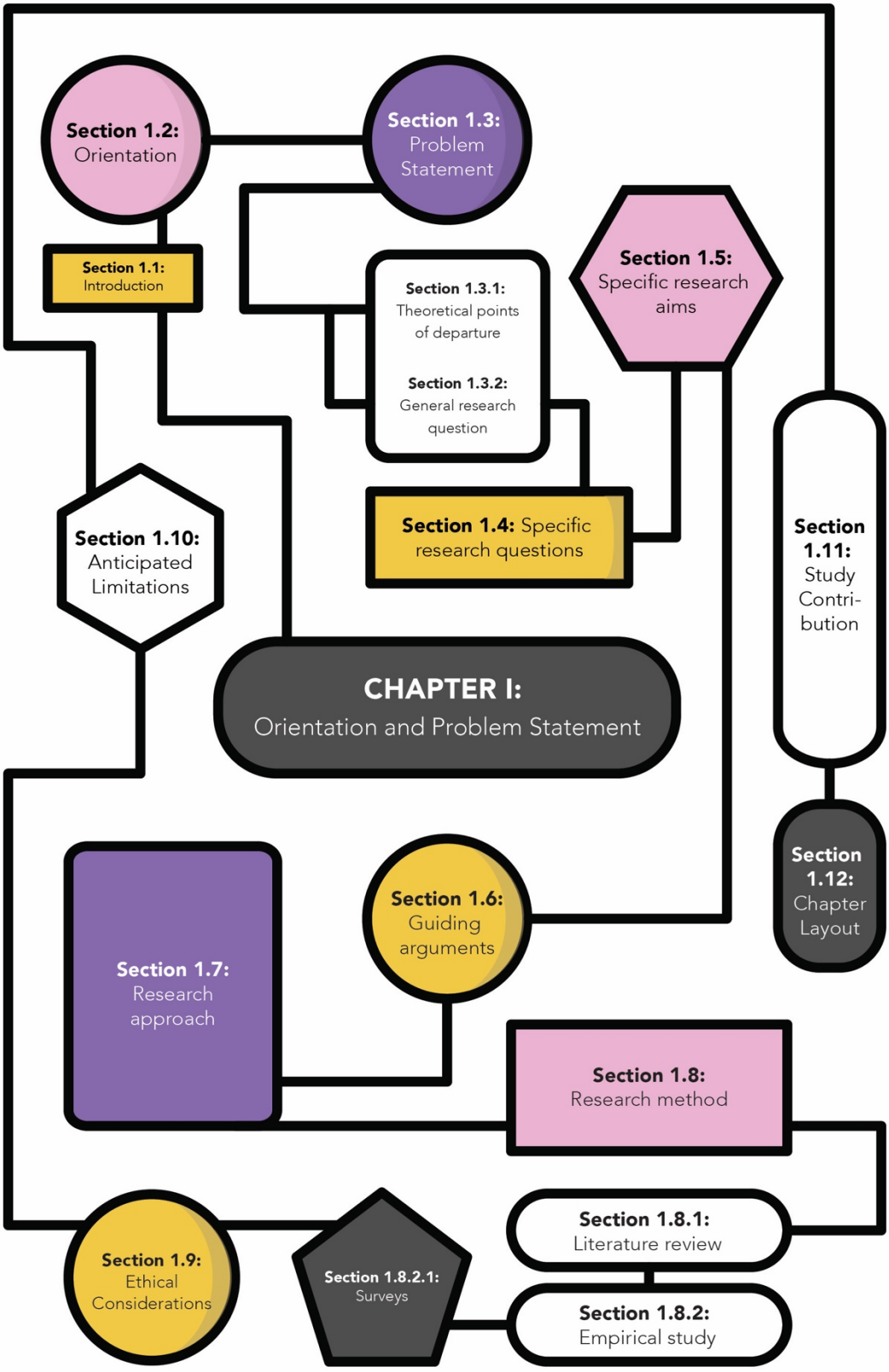
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CHAPTER I: ORIENTATION AND PROBLEM STATEMENT

1.1 Introduction

> Projects require people. People are needed to conceive the idea for the project, design project plans, approve the plans, execute the plans, and close out the project. People are impacted by the outcome of the project. Whether the project is implementing a new software system, a new business unit, or a new bridge, there will be an impact on people. All of these people are stakeholders (Roeder, 2013).

The demand for novel approaches to higher education (HE) teaching and learning and Information and Communication Technologies (ICTs) have grown for at least the past decade, and continues to grow (Bala, 2018:368). A contemporary labour market requires suitable approaches to narrow the swelling fissure between university and the workplace (Myburgh & Venter, 2018:237). Serious games (SGs) are often considered a potential bridging intervention for the proliferation of unskilled/semi-skilled graduates moving into the workforce (Pannese & Carlesi, 2007:438-439; Romero *et al.*, 2015:148-149)—SGs are concerned with more than pure entertainment (Arnab *et al.*, 2015:392; Breuer & Bente, 2010:8; Moloney *et al.*, 2017:1745), and are concerned with the teaching/training of the user through greater levels of access, interactivity, and engagement. Regrettably, it is well-documented (Abeele *et al.*, 2012:82) that the design and development of SGs is an arduous, costly endeavour. The process necessitates great efforts from a variety of stakeholders to effectively create successful SG media (Rooney, 2012a:432). Little is documented about the exact requirements in terms of SG stakeholder positions, activities and specialisations for efficient SG design in the HE sector.

This multidisciplinary study profiles stakeholders typically involved in and affected by development of SGs at HE institutions by employing content analysis as research technique. It explores the positions, activities and specialisations necessary for effective SG design, as well as the main pitfalls and danger signs that can be used to prevent undesirable outcomes. For this purpose, a case study of a former SG interest area: The Serious Games Institute of South Africa (SGI-SA) is conducted; where stakeholders are surveyed to gather their perceptions, thoughts and feelings regarding the operational nature of the interest area in question. A practitioner approach is being applied to understand and better manage the relationships of the various stakeholder groups involved in SG design by way of an interpretivist design (qualitative), in order to contribute to a contemporary framework for SG design at HE institutions. Stakeholder management has many profound implications for corporate communication as a whole (Cornelissen, 2017:42). This study is undertaken in the hope of

contributing to the communication strategies (Argenti, 2013:29) and corporate taxonomies (Walz & Greuter, 2015:1-2) employed by future SG development studios and other SG developers in South Africa. A case study of a former SG interest area such as SGI-SA may yield great insights for initiating sustainable and well-managed communities of practice in HE.

Abbreviations used:

SG – Serious Game

NWU – North-West University

HE – Higher Education

SGI-SA – Serious Games Institute of South Africa

Overview of the study:

The problem(s) – SG design is difficult, costly and requires a variety of stakeholders to successfully conceptualise, develop and publish an SG artefact. Oftentimes, these interest groups need to be specially equipped with a wide array of proficiencies and competencies resulting in amplified complexity. At present, no corporate taxonomy for such interest areas exists in the realm of HE SG development and support.

The context – SGI-SA was an SG interest area at NWU Vanderbijlpark campus (Gauteng, South Africa) from 2011-2018 and stakeholders from this milieu form the sample under investigation. The environment identified is studied comprehensively to narrow down a broad field of academic enquiry.

The gap – No existing taxonomic systems focus on the stakeholders involved in SG development at HE institutions. Such a gap necessitates the classification of all SG interest groups, especially in the HE sector, as SGs are widely considered a part of the modern educators' Information and Communication Technology (ICT) toolkit.

The subject(s) / focus – Various individuals who were impacted by and had an influence on SG design projects at SGI-SA. Stakeholders (and their procedures), as well as serious games (and their creation) make up the main subjects under study.

The approach – Use existing theory, accepted stakeholder diagnostic tools and a suitable research design to sketch a profile of SG stakeholder positions, activities and specialisations by utilising an interpretivist research philosophy to gather qualitative data from survey responses. Content analysis is employed to make replicable and valid inferences by interpreting and coding textual material, i.e. comprehensive online surveys.

According to the NWU affiliate website, SGI-SA was an associate of the wider International Serious Games Institute, established at Coventry University in the United Kingdom (NWU, 2017). SGI-SA was launched in 2011 at the NWU, Vanderbijlpark campus, and served as a support and development entity until late 2018. The small team of eight people developed games between the years 2011 and 2016, which sought to support the training of staff and students at the university in cooperation with outside companies. SGI-SA collaborated successfully on a number of projects in a variety of fields, including Economic Sciences, Educational Sciences (Humanities), Health Sciences and Computer Sciences. This initial team composition drastically changed at the end of 2016 when seven of the eight left to pursue other ventures, and three new members were appointed in 2017—leaving the team with only four members. A total of three SGs were produced between 2017 and 2018 by this second team. SGI-SA represented a dynamic, technology-based and innovative business venture aimed at interweaving the intersections of academia and industry players in the burgeoning field of SGs and training in South Africa (NWU, 2017).

Effective internal communication is crucial for organisations such as SGI-SA, and the NWU more broadly speaking, to empower employees to realise their objectives and ensure a smooth design and development process (Welch & Jackson, 2007:182). Some form of intervention is often required to improve this practice due to its highly complex and interrelated nature and organisational communication is often littered with an extensive combination of approaches, theories and methodologies (Jones *et al.*, 2004:722). This research seeks to lessen the load on SG stakeholders who exert great efforts for their development (Nadolski *et al.*, 2008b:421) by clearly delineating the types of stakeholders and their particular roles, responsibilities and points-of-contact. To accomplish this, the researcher studied existing literature to collate the works into a digestible form to accurately and systematically define these interest groups. Stakeholder theory, as a field of study, contributes rich insights into this multidisciplinary field (computer science, communication).

The typical SG development team soon realises the diverse nature of the people, personalities, aims and subject matter that need to work together to meet a uniform goal—an appealing,

engaging and edifying game. Working through disciplinary tensions and communicating effectively is one of the greatest challenges that SG design teams face when designing SGs (Winn, 2009:1012). This all means that the SG design context has many diverse stakeholder categories (e.g. lecturers as "content experts" and the university as a "publisher/project funder") that differentiates it from the typical AAA game design studio (Rogers, 2014:17-24), with SGI-SA being no exception. Winn's statements also mirror the researcher's experience as a *past member of SGI-SA. The makeup of stakeholders in projects undertaken at SGI-SA were of a unique—often transient nature—as the processes carried out involved a smaller stakeholder grouping than a larger media production house (Roeder, 2013:24). Ultimately, SG design teams are made up of multiple stakeholders from different backgrounds and foci who communicate with one another through conversations, writing, visuals, design animatics and prototypes to create complex artefacts: SGs (Annetta, 2010:110).

SGs innately have a purpose beyond that of pure entertainment, including advertising, learning and social change (Prensky, 2001:1). Furthermore, SGs often appear in overlapping areas of application such as e-learning, edutainment, and game-based learning (digital or otherwise). At the intersection of communication, education, and information technology, manufacturing these self-contained games intended for the life-long learning environment are typically complex, strenuous and pricey (Kelle *et al.*, 2011:555): debilitating their widespread inclusion in the contemporary world of academia. The contribution of stakeholder theory to this milieu lends significance to the outcomes of the research.

With focus on the SG development context of SGI-SA at NWU, the researcher looks towards a bigger issue: no formal profile of the necessary stakeholders, as required to commence and maintain an effective SG development unit/group/team, currently exists in the HE environment. The researcher seeks to develop a full stakeholder profile required to successfully create an SG, rather than merely profile the stakeholders of SGI-SA. This research therefore focuses on the interest areas concerned with serious games in this sphere, as exploring the topic outside of this milieu falls beyond the scope of the study. Consequently, management at a university or college are not equipped with the corporate taxonomy necessary to: (a) ensure the appropriate people are employed in the correct positions as they relate to their roles and responsibilities, (b) warrant that these individuals are performing their particular activities efficiently, and (c) guarantee that these entities of interest are specialised in such a way that SGs are produced carefully and practically. This study seeks to find solutions to these problems (Baalsrud Hauge *et al.*, 2013:1).

**The researcher hereby acknowledges that he is not initiating this research from a blank slate, as this study is undertaken after eight years of professional practice in the media production*

knowledge field. Moreover, the researcher himself was once a part of SGI-SA from 2017 to mid-2018 and operated as a graphic artist for SG design.

1.2 Orientation

Cornelissen (2017:9) maintains that corporate communication, as a field of both professional practice and theoretical inquiry, emphasises vocational skills and management competencies needed to complete a job or project effectively. Such a field of study sees a contemporary organisation as one that realises the need to communicate effectively with their various stakeholders (employees, customers, investors, etc.) to not only nurture their reputations, but safeguard them as well (Cornelissen, 2017:41). An organisational stakeholder is therefore defined as an individual or grouping who is able to affect or is affected by the realisation of an organisation's objectives (Cornelissen, 2017:28). In describing project stakeholders, Roeder (2013:3) states that, whether a project is employing a novel software system or business unit, there is an influence on *people*. Altogether, these individuals are stakeholders. This vast definition is simplified to persons who are subject to, a part of, or have decision making over a project (Roeder, 2013:15). Such a project management-centred definition is reinforced by the introduction of Chapter 13 in the *Project Management Book Of Knowledge* (PMBOK®) Guide (Conchir, 2012). It defines project stakeholders as follows: individuals, groups, or organisations who could affect, be affected by, or recognise themselves as being affected by a decision, activity or outcome of a project. These definitions aided the researcher in classifying inclusion and exclusion criteria when searching for features of SG stakeholders.

Examples of serious communication issues SG development teams could run into, include failure to listen; detachment due to locale/distance; cultural differences; attitudes and egos; problems with authority/hierarchy; poorly written communication; focus issues; skills shortfalls; clique forming; and gender bias. These problems hinder the development of SGs in an already costly, lengthy and composite string of processes (Bogost, 2013). More often than not, these issues result from the multi-stakeholder dynamic found in such project teams and the accompanying vagueness of functions, responsibilities and expectations of the parties in question.

Winn (2009:1012) proposes that SGs cultivate opportunities to learn only if they are effectively designed. As an example, three pertinent perspectives on the design of SGs emerged during the development of a game entitled *Life Preservers*, namely (i) the academic (theories from educational pedagogy to communication theory); (ii) the content expert (interested in given subject matter); and (iii) the game designer (focused on creating engaging/entertaining gameplay) (Winn & Heeter, 2006:1). Teams usually face challenges in working through

disciplinary tensions when converging on the heart of game design (Winn, 2009:1013). This is where the heart of serious game design, as proposed by Winn, begins drawing parallels with the technological pedagogical content knowledge (TPCK) model proposed by Mishra and Koehler (2006:1019-1022). A similar form of surfacing knowledge from theory, content and game design is essential for crafting an effective serious game.

Winn (2009:1010) argues that a prescribed, formal design approach is the only means for SGs to meet their great potential. Other researchers (Kiili, 2005:14-15; Rooney, 2012b:41; Seeney & Routledge, 2009:84-85) agree and underline the significance of utilising a sound theoretical framework as a foundation for serious game design. Rooney (2012b:42-53) explored the gamut of theories proposed to explain what it is and how people learn from games—in order to inform and streamline the design thereof. It is, however, required to have a full understanding of all of the moving parts of an underlying design approach before it can be formalised.

Cornelissen (2017:3) acknowledges that the broader managerial world has accepted the significance of stakeholders and their perceptions as key success factors of a company, but many still do not understand the contribution and role of corporate communication in their environments. The need for stakeholders in organisations to become empowered and equipped with tools to aid them in manoeuvring within the current corporate landscape is also emphasised by Cornelissen (2017:xv). As the concept of an orthodox stakeholder theory developed to more adequately explain the nature and nuance of the modern business world, so too did the definitions of stakeholders themselves (De Bussy *et al.*, 2003:148-149). These stakeholders and their communicative practices have direct and indirect implications for the organisation's corporate objectives, corporate identity, corporate image and reputation (Cornelissen, 2017:6). Organisation-stakeholder relationship (OSR) theory and more broadly, relationship management, has seen application in and has been widely embraced by areas such as integrated marketing programmes, corporate communications, marketing and public relations (Waters *et al.*, 2011:90). Morgan and Hunt (1994:20) put forward the concept of establishing a basis of trust between organisation and stakeholder, ranging from marketing's traditional consumer base to an NPO's donors.

Table 1-1: The four processes in project stakeholder management, adapted from Schwalbe (2015:511)

PROCESS	DESCRIPTION	OUTCOME(S)
1. IDENTIFY STAKEHOLDERS	Describing all people involved in a project or affected by it; then choosing the most appropriate ways to manage relationships with them.	Stakeholder register.
2. PLAN STAKEHOLDER MANAGEMENT	Deciding on approaches to engage the identified stakeholders in project decisions based on their needs, interests and potential impact.	Stakeholder management plan and project document updates.
3. MANAGE STAKEHOLDER ENGAGEMENT	Communicating and collaborating with stakeholders to satisfy their needs and expectations, solve problems and cultivate engagement.	Issue logs, change requests, project management plan updates, project document updates and organisational process assets updates.
4. CONTROL STAKEHOLDER ENGAGEMENT	Overseeing stakeholder relationships and adjusting plans for engaging stakeholders (as needed).	Work performance information, change requests, project document updates and organisational process assets updates.

Schwalbe (2015:510) affirms these notions from a project management perspective in Information Technology by emphasising that several concepts related to communications and human resource management also apply to stakeholder management; but acknowledges that a range of distinctive activities are recommended to perform valuable stakeholder management, as shown in Table 1-1.

Stakeholder management is imperative to the SG development process. Susi *et al.* (2007:1) define SGs as (digital) games which are utilised for reasons other than conventional, commercial games which seek to purely entertain. Communities and organisations involved in developing games are as varied as the kinds of games they create. These individuals are typically referred to as *developers* or *dev* (development) *teams* (Rogers, 2014:17). SGI-SA was such a group—similar to a television show production unit or film crew, i.e. several people

cooperating to create some form of entertainment or product (Rogers, 2014:17-18). Development teams are typically made up of several individuals taking up positions which fulfil certain roles which could be specialised or blended with other responsibilities. Projects undertaken by these teams are completed over an extended period of time and can become increasingly complex due to the mix of not only stakeholder structure, but the overlap and assortment of responsibilities and proficiencies of SG stakeholders themselves. Moreover, the various developers hold deep technical skills in an assortment of areas and specialisations, such as 3D design, software, 2D art and animation, narrative writing, etc. It can therefore be conceded that the multifaceted nature of SG projects makes them a good candidate for the application of a formal stakeholder perspective.

Some form of intervention is often required to improve stakeholder relations, due to its highly complex and interrelated nature, as organisational communication is made up of a broad range of approaches, theories and methodologies (Jones *et al.*, 2004:722). This study in particular aims to improve the communication and management of SG stakeholders (Westera *et al.*, 2008:420) by clearly delineating the communication of stakeholders and their particular roles and responsibilities in SG project teams. To accomplish this, the researcher studied and adapted existing corporate communication literature to accurately express what stakeholder theory entails and its potential benefits for the SG design context. Stakeholder theory as a field of research can contribute rich insights into a field often considered to be only related to computer science. This is complicated partially by the fact that some communication needs to be in a technical format that can easily be misunderstood by stakeholders with a non-technical background.

Schwalbe (2012:1437) stresses the function of stakeholder management on project success, in particular the importance of communication (i.e. healthy dialogue and addressing issues) between project managers and their teams to ensure stakeholder satisfaction. The researcher would agree that these foundational concepts apply within the context of game creators, players/users, artists, programmers, managers, testers, etc. Existing definitions need only be adapted and placed into the SG design context to suit its working environment, i.e. stakeholder engagement, management, relationship to strategic business processes and integration. This collection of theory forms the basis for the systematic literature searches explained later in this research.

1.3 Problem statement

Producing SGs is expensive, laborious and care should be taken to ensure that they are instrumental to learning (Ravyse *et al.*, 2017:32). A description of stakeholders capable of

guiding all parties and relevant participants (project initiators, content experts, development team members, etc.) involved in the development of SGs remains undeniably absent. As Roungas and Dalpiaz (2015:6) put it: many SG design frameworks exist, yet these types of games are too frequently created in an ad-hoc manner. Filling the gap for a versatile, general-purpose corporate taxonomy which zeroes in on the stakeholders involved in SG design could improve turnover time, product quality, team communication, art outputs and numerous ancillary aspects of the development process.

As these entities often do, SGI-SA had limited resources (human capital, money, etc.) and time allocated to them by management and required a strategy to manage its stakeholders and their communication effectively. Corporate communication theories and approaches can provide future SG interest areas with an overview of which stakeholder groups require attention and need to be communicated with: as lessons learned. For example, a stakeholder classification model, such as the stakeholder salience model or power-interest matrix, are tools with which to identify and classify these persons according to their communicative nature, power, requirements and interest in the project and its objectives.

Usually, a lecturer or academic at NWU would approach SGI-SA with the idea of introducing a game into their programme to address learning gaps or assist students in grasping the course content. This identified need was often insufficiently researched and/or superficially sought after by the responsible person(s). These individuals—referred to as “content experts”—then supplied the project team with inadequate materials from which to draw content knowledge, such as textbooks, PowerPoint slides and Word documents, etc. Project team members, such as programmers, artists and other developers could not afford to develop the competencies of content experts in the HE environment, and relied heavily on the contributions of the *au fait* or expert contributor(s). If the materials supplied to the team were inadequate, the project would fail more often than not. It is with these limitations in mind that the researcher puts forward the study in order to ascertain who the stakeholders involved in SG development at SGI-SA were and what responsibilities they had in designing SGs for NWU. This research seeks to delve deeper into the phenomenon and provide subsequent stakeholders involved in the specific context of SG design with an overview of their communication practice(s) as they relate to their own stakes, opportunities, challenges, and responsibilities in terms of both organisational and project undertakings—to better understand the nature of pertinent stakeholder classes.

Snape and Spencer (cited by Ritchie *et al.*, 2003:1) maintain that the social world is mediated through “meaning” and “human agency” and is not governed by law-like regularities. Based on the results of the empirical application of computer science and corporate communication literature/theories to a real-world scenario at SGI-SA, the researcher intends to discover

whether or not the exact nature, scope and meaning of the communication of these stakeholders can be unpacked and understood to better establish the functions, responsibilities and how these expectations are communicated and interpreted by all stakeholders. This is all done to put forward a holistic overview of the stakeholders who practised SG design at SGI-SA.

1.3.1 Theoretical points of departure

A research philosophy refers to a system of beliefs and assumptions about developing knowledge in a particular field of study (Saunders *et al.*, 2009:124). This case study employs an interpretivist philosophy, as the researcher recognises that there are different ways of interpreting the world and approaching research (James, 1975:4). Moreover, an inductive approach is utilised with the intention of: (a) explaining causal relationships between concepts and variables (stakeholders and serious game development); and (b) deducing conclusions from premises or propositions (the nature of communication—as it relates to stakeholder positions, activities and specialisations—at SGI-SA is insufficiently studied). The resulting interpretive research strategy seeks to gather qualitative (mono-method) data by way of surveys sent to SGI-SA stakeholders in the identified SG design context. This case study seeks to be versatile and adaptive in its approach by focusing on a single context to afford potential for theory construction and testing. Content analysis, unitisation, open coding and interpretive analysis are used as analysis techniques for the responses received from the stakeholders themselves.

1.3.2 General research question

A central question thus guides the study, and can be expressed as follows:

To what extent can content analysis techniques identify, clarify and enumerate the nature of serious game stakeholders at an interest area, such as the Serious Games Institute (NWU, Vanderbijlpark campus,) form a functional profile of those stakeholders?

Stakeholder engagement at all levels of the operational structure is generally sought after and useful in the game design sphere (Alcover *et al.*, 2018), *but can the computer science and stakeholder theory corpus address the absence of a profile for serious game stakeholders?* This study assumes the answer to this question is “yes” (Sušnik *et al.*, 2018), as the bedrocks of stakeholder theory (i.e. employees, vendors, agencies and the organisational success attained from satisfying them) apply to the context of serious game development, but *what is applicable and what would the implications be?* (Freeman, 2010). The researcher intends to discover whether or not the exact nature, scope and meaning of stakeholders in the context of

serious game design and development can be defined from literature to better establish the functions, responsibilities and expectations of these parties. And if not, to put forward a holistic definition thereof.

As a research proposition, it is put forward that the formation of a functional profile may offer these stakeholders clarity, direction and support in their endeavours. In addition to this proposition, the following specific research questions should be answered:

1.4 Specific research questions

Stemming from this core question are a number of sub-questions which underpin the inquiry:

(a) To what extent can serious game stakeholders at SGI-SA be functionally categorised by way of a stakeholder management approach?

(b) In what ways can functional stakeholder categories assist in determining the positions, activities and specialisations of SGI-SA stakeholders?

(c) What are the perceptions of SGI-SA stakeholders regarding their own organisational practice, communication and the efficiency of operations?

1.5 Specific research aims

The research in question is described as being basic communication research, as the researcher seeks to make constructive contributions to understanding relationships among variables (Du Plooy, 2009:16-17). The variables in question being stakeholders within the serious game design context and the categories thereof. The study endeavours to review pertinent literature and offer a holistic picture of SG stakeholders designed to better describe the nature, scope and meaning of various stakeholders involved in the design process. This is achieved by performing a literature review of relevant studies in order to identify, evaluate and integrate the findings into a new taxonomy of the role players in question. The context of serious game design at SGI-SA, the NWU and the broader international community are used as a reference when identifying search criteria for the in-depth review. Finally, the emerging classification system—now informed by a literature review and the overall development context—are utilised in interactions with past SGI-SA project collaborators, contributors and associates. Consolidating the various responses of stakeholders from an online survey makes clear who exactly is required to successfully operate an SG development team in the realm of HE.

The research aims are as follows:

a) To theoretically explore serious games and stakeholder theory by way of a literature review to ascertain the extent to which stakeholders at SGI-SA can be categorised into functional categories for serious game design.

b) To determine, through analysis of online survey responses, the ways in which functional stakeholder categories assist in determining the positions, activities and specialisations of SGI-SA stakeholders.

c) To shed light on the perceptions of SGI-SA stakeholders regarding their own organisational practice, communication and the efficiency of operations through inference of open-ended survey codes/categories.

In summary, the following guiding arguments frame this study:

1.6 Guiding arguments

- No formal classification of all serious game stakeholders currently exists, as shown by a pilot gap analysis and subsequent preliminary searches on scientific research databases (i.e. Google Scholar, EBSCOhost). Sušnik *et al.* (2018:143) come closest to describing the reality of the multifarious SG development process in their article "Multi-Stakeholder Development of a Serious Game to Explore the Water-Energy-Food-Land-Climate Nexus: The SIM4NEXUS Approach". The researcher endeavours to collate as many relevant definitions of stakeholders found within predetermined parameters and fields, to put forward a new taxonomy to offer these stakeholders clarity, direction and support.

- The production of SGs "tends to be complex, laborious and costly" (Kelle *et al.*, 2011:555), making it a challenging undertaking for all of the parties involved. This argument is central to the study, as it serves to justify the need to develop a new classification for the stakeholders immersed in this context.

- Many frameworks exist that attempt to streamline and simplify the complex processes involved in serious game design, but these pieces of didactic media are still regularly produced in an ad-hoc manner (Roungas & Dalpiaz, 2015:1-3). The formulation of a new classification system for serious game stakeholders could potentially assist in further developing frameworks detailed enough to structure the overall development process.

1.7 Research approach

A literature review is undertaken to ground the study and to gain an understanding of existing theories and research. This study, specifically, employs qualitative techniques to answer the research questions posed earlier in this document, and seeks to discover more on the nature of stakeholders at SGI-SA (as an example of such an interest area). This study, in particular, uses a descriptive case study research design to carefully examine issues, topics, people or programmes (Hays, 2004:218) by exploring stakeholder experiences at SGI-SA. Furthermore, the case study approach is combined with that of an explanatory design to produce robust evidence and a better understanding of circumstances in the specific context.

1.8 Research method

Social researchers are increasingly confronted with rapid social change and the resulting diversification of life often necessitates the formation of new social contexts and perspectives. Consequently, traditional deductive methodologies fail due to “the differentiation of objects”—developing research questions/hypotheses from theoretical models and testing them against empirical evidence (Flick, 2014). Social contexts demand from researchers to “sensitize concepts” rather than starting from theories and testing them (Flick, 2014). Inductive approaches to social science research then try to generate new knowledge and theory from emergent data. Contrary to positivism, interpretivism asserts that more than a single possible reality exists. Only through deep reflection and the interaction(s) between the researcher and subject can these multifarious realities be elucidated (Ponterotto, 2005). Flick (2014) lists the features of qualitative research in describing these realities as being: method and theory appropriateness for the study; perspectives from participants and their diversity; researcher and research reflexivity; and a variety of approaches/methods. Content analysis techniques are utilised as a general method to systematically evaluate texts i.e. survey responses, to examine the nuances of organisational behaviour and stakeholder perceptions at SGI-SA.

1.8.1 Literature review

Dochy (2006:11) maintains that the literature review of any study should position existing literature within the bounds of the larger historical and scholarly context. The theoretical exploration seeks to study existing works in the computer science and corporate communication field, while focusing on stakeholders as the people who are part of or subject to the decision making of a project (Roeder, 2013:15). Additionally, the context of serious games and HE which frame the investigation lend the review of literature a sense of novelty and uniqueness, as such an enquiry has yet to be accomplished.

This dissertation aims to examine existing academic literature between the years 2008 and 2019 to remain focused on recent events and maintain modern theoretical relevance; and to mine computer science, serious games and corporate communication theory, principles and diagnostic tools to better understand prior research on the topic of SG stakeholders. Digital databases applicable to computer science, serious games, communication studies, corporate communication, stakeholder theory and media production, engineering, education, social sciences and health sciences (a large sector for serious game development) are searched, including: EBSCOhost, Applied Science & Technology, Google Scholar, Academic Search Premier, SA Media, SACat, ScienceDirect, Scopus, Nexus and JSTOR. This leads the researcher to an answer for the chief research question to identify the stakeholders participating in SG design at SGI-SA. This theoretical exploration is the first step in research procedures for this study.

1.8.2 Empirical study

The target population for the empirical segment of the research is made up of the stakeholders involved in SG development at SGI-SA. This population identified on the NWU, Vanderbijlpark campus includes lecturers (content experts); game designers; programmers; artists; testers; producers; managers; and students (users). Various population parameters (nature, size and unique characteristics) are defined to ensure that the units of analysis remain representative, accessible and generalisable for the deeper analysis to come (see Cornelissen, 2008:110).

Eight people (n=8) made up the core project team from 2011 to 2016 (Team 1: T1) and four people (n=4) filled these positions at SGI-SA from 2017 to 2018 (Team 2: T2). The researcher was part of the latter team (T2) and is subsequently excluded from the sample population (T2: n=3). Two additional content expert stakeholders (n=2)—who are academic staff members of the NWU (Vanderbijlpark campus)—also fall within this population. An NWU faculty member (n=1) who served as the institutional driving force (project manager) behind SGI-SA are also counted as part of the sample drawn. Finally, five users/students (n=5) from the NWU Vanderbijlpark campus round off the stakeholders under investigation. A grand total of 19 stakeholders (n=19) are included in the study. The aforementioned sampling procedures are elaborated on further in Chapter III of the dissertation. Furthermore, the researcher remains open to the possibility of unknown stakeholders emerging during the investigation who should be included with accuracy in mind.

The researcher will do his best to ensure the generalisability of the findings in the appropriate proportions (race, gender, age group), to create a universal hypothesis for theory—if the results obtained are consistent across person, time, and place. The researcher endeavours to obtain

a fully representative sample of users and content experts by placing controls on the types of participants required to match the scope and numbers of other identified stakeholders, as these numbers tend to be smaller than the rest.

1.8.2.1 Surveys

Online, written (qualitative) surveys are utilised due to their low cost and wide reach (De Leeuw, 2005:234-246). Many of the sampled stakeholders are former NWU employees and have relocated to various places across South Africa and some have moved abroad. The cost-efficient nature of surveys allows the researcher to contact the intended participants in a practical, timely and scalable way no matter where they reside/work. Provided these parties have an internet connection, they can respond within their own time with little pressure administered by the researcher. The purpose of the self-administered surveys is to gather data on the target stakeholder population.

The researcher intends to collect specific and targeted responses regarding the nature (frequency, audience, objectives, channel, impact and timeliness) of these stakeholders' communicative practice, because they have the specific knowledge the researcher is looking for. Due to the nature of SGs, the target market for these products tends to be extremely diverse, e.g. students from NWU Vanderbijlpark campus who vary in age and demographic makeup; employees in specific fields of work (e.g. construction). The users, then, are relatively heterogeneous, whereas the remaining stakeholders have a high level of consistency and homogeneity due to the requirements in terms of proficiencies, structure and communication.

Deductive analysis (descriptive statistics) informs the data analysis of the demographic information collected by the online survey. This survey contains both closed-ended and open-ended questions. With this in mind, various portions of the data collection instrument ask participants to formulate their own answer(s) without being prompted from the question itself (see Cornelissen, 2008:158). Jargon and technical language are also avoided to ensure that participants understand the terms used (unless technical wording is required from item-specific inquiry in the survey). Since the majority of stakeholders were directly involved in the creation, testing or training of the products there is a reasonable expectation that they should be familiar with some of the more technical jargon involved in these processes.

Narrative analysis is utilised to sort, reflect upon and present the emergent stories from these individuals on their distinct experiences in Chapter V of this dissertation. This analysis is therefore non-linear, iterative and employs inflection to demonstrate an interpretation of proceedings. Narratives drawn from coding on the data constitute these inferences. The

sample includes SGI-SA stakeholders to garner a complete set of data on their perceptions and perspectives regarding their own communication, stakes, opportunities, challenges, and responsibilities in their own dynamic environment(s). Efforts are made to reach out to as many of the SGI-SA stakeholders as possible.

1.9 Ethical considerations

This research is executed in a manner which complies with the ethical standards of academic research. Relevant literature is studied through quality assessments based on the chosen methods. Sample research methods for the indicated empirical components (electronic survey) are submitted to the appropriate ethics committee of the North-West University for approval/clearance. The researcher assured that he complied with required legislation and policies of identified stakeholders and stakeholder bodies. Written permission was obtained from the affiliated bodies at North-West University, i.e. Faculty of Natural and Agricultural Sciences, School of Computer Science and Information Systems (Annexure E) and other organisational management to acquire information from the identified sample population.

1.10 Anticipated limitations

Firstly, a cross-disciplinary approach to the research calls for the study to be completed in an integrated, comprehensive manner, filtering through pertinent theoretical works to identify key concepts and constructs from corporate communication models, serious game design practice, stakeholder theory, computer science papers, stakeholder management approaches, and information systems schema. There are many moving parts to such an approach, but the researcher intends to clearly delineate the boundaries of the research at the beginning of Chapter II to minimise the possibility of focussing on redundant or excessive content.

Secondly, the surveys are being administered after the participants were a part of SGI-SA. This means the application of this method occurs after-the-fact and may possibly lead to participants forgetting details or overlooking finer points which could pertain to the study. Fortunately, surveys allow for the researcher to determine the level of amiability participants feel towards particular statements/items, granting the gathered responses a degree of accuracy even if participants forget specifics.

Thirdly, the sample size for the study is relatively small. The focus of the research questions and objectives of this research is on a single SG development unit—SGI-SA—and reaching out to every possible stakeholder ensures a representative sample is studied. All nineteen (19) sampled participants are questioned, ranging in age and/or language proficiency. Not every participant is uniformly well-spoken, expressive or astute; this could result in answers which

are insufficiently asserted or expressed. To overcome this, the researcher examines participant responses acutely and probes for additional information to address potential erroneousness in responses. Access to the NWU's Statistical Consultation Services alleviates some of the load posed by analysing larger data sets, as the researcher recognises that employing a qualitative aspect to the study and analysing the obtained data through both deductive and inductive means may become time-consuming and labour intensive (Morgan & Smircich, 1980: 497-499; Elo & Kyngäs, 2008:109; and Maxwell, 2012:215).

A final consideration is that SGI-SA formed part of a larger organisation—the NWU—which has its own established culture and operational structure. Given this, it could potentially be difficult to discern the origin and magnitude of corporate communication issues arising from both the smaller unit under investigation (SGI-SA) and the larger institution (NWU). The impact of this discrepancy is most prevalent when generalising the findings to make them translate to other organisations and serious game development units. Consequently, the researcher aims to make the demarcation of each clear and explicit as to the impact and scope of the various moving parts in either sector in the summative chapters of the dissertation. Stakeholders who acted as the interface between the larger NWU and SGI-SA were considered and surveyed, so the research is as complete as could be reasonably expected. The researcher remains confident of the chosen methods and the research remains significant and worthwhile; but the limitations above should be kept in mind.

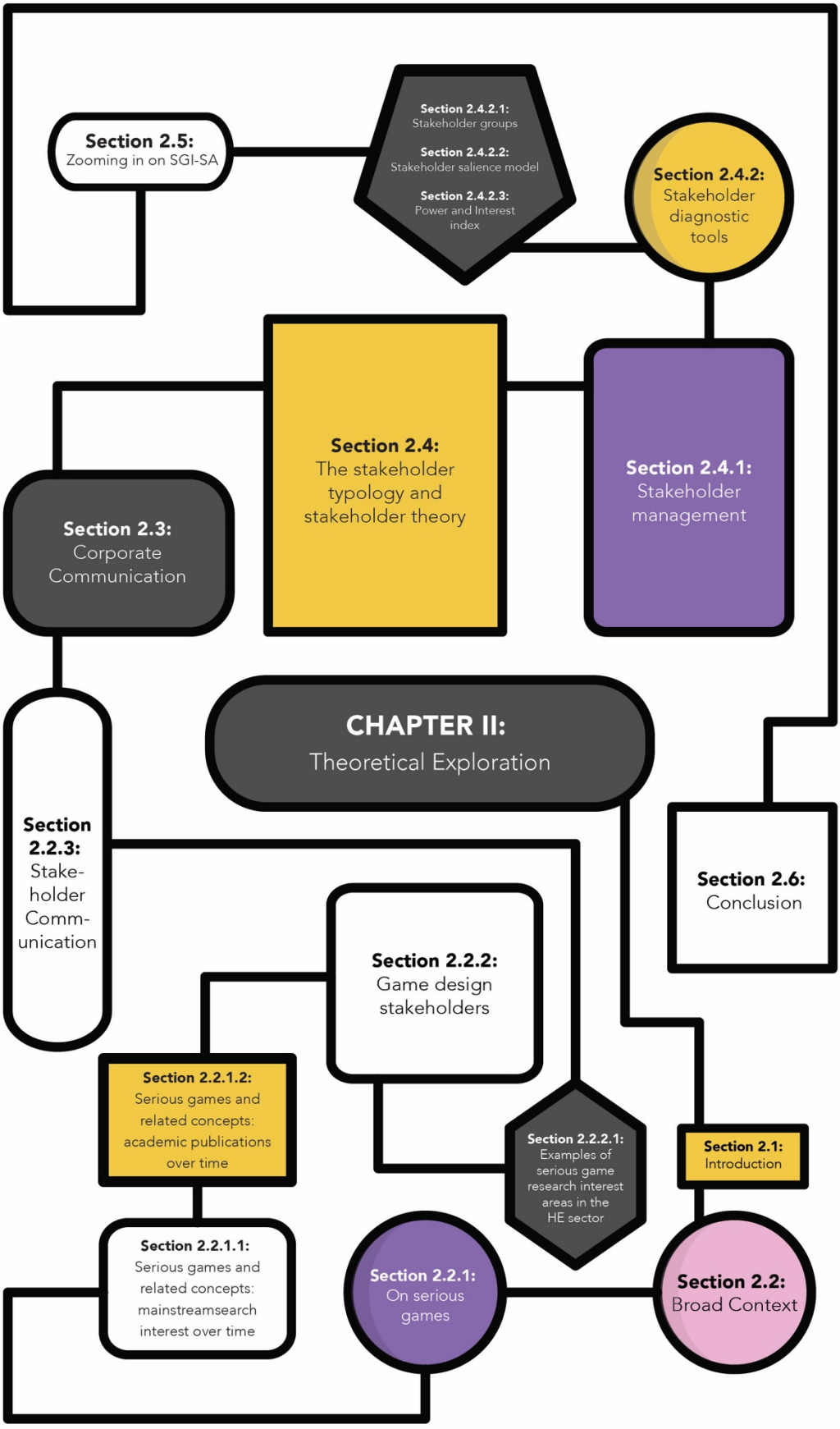
1.11 Study contribution

The impact of this study lies within the realms of corporate communication (i.e. stakeholder theory, media production), computer science, information systems, and education. This interdisciplinary research seeks to detail the characteristics of stakeholders in the serious game production context of SGI-SA by poring through existing theory and tools in literature; collating the emergent data; questioning stakeholders on their positions, activities and specialisations; analysing their responses; and presenting the findings. By solidifying a classification for these interest groups, the results of this interpretivist study can assist in updating the scientific corpus and aid in untangling the uncertainties rife in the sphere of serious game development at HE institutions. Accomplishing this task involves formulating a relevant communication overview as represented by SGI-SA. Likewise, the results of this research can aid in SG development teams: (a) understanding and taking charge of all SG activities; (b) identifying the appropriate roles and stakeholders to design/develop SGs more effectively; (c) determining which events fall within their control and which do not; (d) recognising how stakeholders can contribute to functional areas within serious game interest areas; and (e) discovering novel plans to use in future SG contexts.

1.12 Chapter layout

The dissertation is made up of the following chapters:

- Chapter I: Orientation and problem statement
- Chapter II: Theoretical exploration
- Chapter III: Research design and methodology
- Chapter IV: Results and findings
- Chapter V: Conclusions and recommendations


Section 2.5:
Zooming in on SGI-SA
Section 2.4.2.1:
Stakeholder groups
Section 2.4.2.2:
Stakeholder salience model
Section 2.4.2.3:
Power and Interest index
Section 2.4.2:
Stakeholder diagnostic tools
Section 2.4:
The stakeholder typology and stakeholder theory
Section 2.4.1:
Stakeholder management
Section 2.3:
Corporate Communication
CHAPTER II:
Theoretical Exploration
Section 2.2.3:
Stake-holder Comm-unication
Section 2.6:
Conclusion
Section 2.2.2:
Game design stakeholders
Section 2.2.1.2:
Serious games and related concepts: academic publications over time
Section 2.2.2.1:
Examples of serious game research interest areas in the HE sector
Section 2.1:
Introduction
Section 2.2.1.1:
Serious games and related concepts: mainstreamsearch interest over time
Section 2.2.1:
On serious games
Section 2.2:
Broad Context

CHAPTER II: THEORETICAL EXPLORATION

2.1 Introduction

In exploring the potential for application of stakeholder theory in the serious game design context at SGI-SA, this chapter looks to unpack serious games and stakeholder management in a modern business world. Emphasis is placed on the various activities involved in managing the internal and external communication amongst and between stakeholders in an organisation with special attention given to higher education (HE) serious game interest areas. The theoretical exploration further looks at the makeup and characteristics of stakeholder groups within these HE entities and the central aspects, such as positions, activities, specialisations and trends thereof are explored. This is done from a corporate communication, multidimensional stakeholder theory and relativist perspective. Webster and Watson (2002:xiii) assert that effectively reviewing germane literature can nurture the development of theory, reveal areas for which research is required, and fill these gaps for existing literature. Few studies have addressed the communicative practice of serious game stakeholders, with many focussing instead on the macro-level, complex processes involved in developing effective games for learning (i.e. frameworks for game design)—and not the people *communicating* in these processes and what is required to sustainably initiate and manage serious game communities of practice in South Africa.

This specific review firstly aims to provide context and relay pertinent information to readers regarding serious games and their nature and function. Secondly, corporate communication as an array of functions aimed at managing the internal and external communications of organisational and project stakeholders is described. Thirdly, characteristics, functions and the makeup of serious game interest entities at HE institutions is unpacked. Fourthly, components of stakeholder communication (internal/external) and the extent to which SGI-SA stakeholders can be categorised will be explored by way of collating prior sections and use-cases of similar entities. Finally, the following sections have the goal of clearly illustrating the gaps and parallels in existing literature and expounds upon the management of stakeholders in serious game interest areas and how these entities can operate within such a context. The exploration also shows that various aspects of stakeholders in the serious game design context are insufficiently studied, by (a) demonstrating the significance of stakeholder theory in understanding the constituencies of an organisation; (b) reflecting the current state of knowledge with regard to stakeholder definitions/categories in serious game literature; and (c) bringing order to the chaos of collected works in this field of knowledge.

Theoretical relevance is maintained by largely examining literature published between 2008 and 2019 to identify the most suitable points of departure (theory, principles and use-cases) for the ensuing empirical study. Older literature is only cited when discussing the origins of germane concepts and theories (i.e. Freeman's work on developing stakeholder theory). Databases covering an assortment of subjects, including communication studies, corporate communication, stakeholder theory, internal/external communication, media production, computer science and engineering, education, social sciences and health sciences, are searched using: EBSCOhost, Google Scholar, Applied Science & Technology, Academic Search Premier, SA Media, SACat, ScienceDirect, Scopus and JSTOR.

In delineating the boundaries of this research, the study does not concentrate on serious game research areas outside of South Africa, organisational structures, organisational culture, project/product phases and lifecycles, negotiation, or leadership, as these concepts fall outside of the focus of this particular study.

Assumptions and points of departure

- Contextually, the stakeholder structure of SGI-SA was similar to that of contemporary independent video game development studios, with many employees requiring a blend of competencies to cover a range of development and publishing activities;
- There is a gap in local and international research on the stakeholders involved in serious game design—especially regarding the nature of communication in such organisations;
- Corporate communication, as a group of ever-changing managerial functions, is largely acknowledged by the managerial world that sees value maximisation as the central organisational objective; and
- Stakeholder management theory can potentially aid in understanding the nature of communication at SGI-SA and could help improve the positions, activities and specialisations for future development teams, by asserting that value maximisation cannot be attained if an organisation ignores the interests of its stakeholders.

What does this chapter add?

- This chapter expounds on the subjects under study (i.e. serious game stakeholders and pertinent communication phenomena) and how they relate to the research in question;
- Discusses the broader topics of serious games, corporate communication and stakeholder theory;
- Provides insights as to why the communication of stakeholders in serious game development are inadequately understood and insufficiently studied; and
- Reflects the current state of knowledge and extent to which serious games, corporate communication, stakeholder management and components of communication can ascertain how stakeholders at SGI-SA can be categorised.

Abbreviations used:

CC – Corporate Communication

SG – Serious games

PR – Public Relations

ST – Stakeholder theory

S – Stakeholder(s)

SM – Stakeholder Management

Theoretical statement: Guiding questions

- What is corporate communication and what impact does it have on organisational stakeholders?
- What is the nature and function of serious games?

- What are the characteristics, functions and makeup of AAA game studios and how do they relate to the research subjects, i.e. serious game stakeholders at these interest areas?
- What are the characteristics, functions and makeup of serious game interest entities at HE institutions?
- What are the components of stakeholder communication?
- To what extent can serious game stakeholders be categorised?
- How do stakeholders at SGI-SA perceive their own communicative practices?
- Is there strategic intent behind internal/external communication at SGI-SA?

Theoretical statement: Rationale

- Communication and corporate practice(s) between stakeholders at SGI-SA and other SG interest areas are poorly studied, requiring the application of stakeholder theory to better understand the nature and makeup thereof.
- The clarification of the nature of communication between and amongst SGI-SA stakeholders may offer guidance to current and future teams by analysing this case study.

Theoretical statement: Informing the empirical study

- Identifying and understanding how SGI-SA stakeholders perceive, classify and categorise themselves in terms of their stakeholder positions, activities and specialisations.

Central definitions

- *Stakeholders:* persons or groups with vested interests in a project/organisation who may purposefully or unwittingly affect or be affected by the operations or outcomes of a project.
- *Key stakeholders:* persons or groups who are able to notably influence or hinder a project due to their importance.

- *Serious games:* gaming artefacts that engage users and contribute towards the attainment of a predefined purpose other than pure entertainment (consciously or not) (Rego *et al.*, 2010:4).
- *Research interest area:* a specialised research entity which aims to conduct academic enquiries. These are typically associated with a HE institution.

2.2 Broad context: framing SGI-SA within a stakeholder management lens

Communication continues to grow in importance in a post-industrial society (Tubbs *et al.*, 2008:496). Studies provide evidence of this by showing how communicative practice can impact on organisational performance; and this is known to be true in widely differing areas such as engineering, medical sciences, HE and law (Tubbs *et al.*, 2008:496-497). This type of inquiry often focuses on the relationship between employees and their communication. Tubbs *et al.* (2008:477-496) clearly delineate these relationships as communication channels, including: *downward communication* (superior to subordinate), *upward communication* (subordinate to superior), *horizontal communication* (coordination of organisational functions), and *informal communication* (transmission, assimilation, distortion). These channels are typically used by work groups to accomplish a specific task. Whether the emphasis of a CC study is placed on the communication or its relationship with employees, one element is usually central to any investigation—the people in an organisation.

The widespread managerial world has accepted the significance of S and their perceptions as key success factors of a company, but many still do not understand the contribution and role of CC in their environments (Cornelissen, 2017:3). Adverse effects arise when S misunderstand circumstances at their organisation and how they could affect their operations and profits, ranging from stakeholders feeling trivialised or belittled, communication plans becoming compromised, and management feeling powerless (Cornelissen, 2017:3). Cutting through these trends, however, Cornelissen (2017:xv) emphasises the need for S in organisations to become empowered and equipped with tools capable of aiding them in manoeuvring and succeeding in the current corporate landscape.

Schwalbe (2015:2) concurs with Cornelissen's assessment of progressive organisational trends and the significance of SM in broader society but frame their discussion around information technology (IT), specifically. Entities seeking to remain competitive in their place of work are waking up to the fact that they need to foster good project management skills and employ these techniques to work effectively with people and technology on a daily basis

(Schwalbe, 2015:3). In this context, Schwalbe (2015:55-56) argues that an unwavering commitment to IT is integral to project success. However, having a commitment to IT does not necessarily mean that IT is a context that CC is applicable to. The context of IT is therefore considered different to the application of IT in an organisation.

SGI-SA existed and operated squarely in the realm of IT, as well as other operational areas such as HE and academic support. Whether it is a producer or service provider—both, in the instance of SGI-SA—an organisation has certain responsibilities towards target S groups, as the resultant behaviour influences their own success (Dawkins & Lewis, 2003:185). Unfortunately, the nature of communication at SGI-SA was in no way studied (internally or externally) to illuminate the S involved in SG design regarding their own communicative structure and practice. Questions therefore arise following the closure of the support and production unit in 2018, such as: *What did corporate practice at SGI-SA look like?*; *Was there strategic intent behind communication at SGI-SA?*; and *How did stakeholders at SGI-SA perceive their own activities, positions and specialisations?*

In this study it is argued that these questions can be answered by applying an SM approach to the specific context which enables the researcher to adequately address the research problem and its accompanying complexity. Section 2.2.1 starts by looking at the products designed and developed by the stakeholders investigated in this study—SGs.

2.2.1 On serious games

**Note: The researcher regards SGs, educational games, etc. as synonyms in this literature review for the sake of simplicity and consistency.*

The domain of SGs is wide-reaching, multidimensional and diverse. Ideally, an SG is intended to do more than entertain its audience/user and is made up of assorted aspects of education, such as informing, training and teaching (Susi *et al.*, 2007:2). Abundant related and overlapping areas of interest fall within the SG sector as well, including edutainment, e-learning, game-based learning and digital game-based learning (Rego *et al.*, 2010:1-2). Furthermore, the conceptualisation and design of SGs is a dynamic and active area for research, as it combines manifold “design methodologies, narrative structures, visual arts, interaction techniques and modalities/technologies” proven in entertainment games for other means (Rego *et al.*, 2010:2-3).

Serious games have seen application in several fields, including health, military, government and education (Rego *et al.*, 2010:1-2). SGs are distinct from recreational games media, as they intend to do more than satisfy the recreational and entertainment needs of the player

(Deterding *et al.*, 2011:2). This form of educational intervention tends to focus on and nurture the procuring of skills and competencies that are of value online and in the real world (Rankin *et al.*, 2008:43). In the context of this study, the assumption is made that SGs, games for learning, games for change, and educational games are largely referring to the same type of system and are read as synonyms for the remainder of this work.

Notwithstanding the sustained interest in SGs, one should understand that crafting such experiences and creating these interventions can be incredibly intricate and costly—and offer a wealth of ancillary challenges to boot (Boyle *et al.*, 2016:178-180). Development of SGs at SGI-SA was no different. The assortment of S involved in these projects included experts such as lecturers and researchers from both education and industry, developers like managers, artists and programmers, as well as consumers (players, users, students, management and staff).

Laamarti *et al.* (2014:4) do good work defining the nature and function of SGs. From reviewing literature in their 2014 work "An overview of serious games", they conclude that both research and industry agree that SGs involve some element of: (a) enhancing the user experience through multimodal interaction, within a certain context (Arnab *et al.*, 2011:151); (b) rich media in the form of text, visuals, haptics, audio and animation; and (c) an entertainment dimension which intends to stimulate an emotional response from the player (Alvarez & Michaud, 2008:84). Figure 2-1 illustrates the nature of SGs, specifically as they relate to these three dimensions.

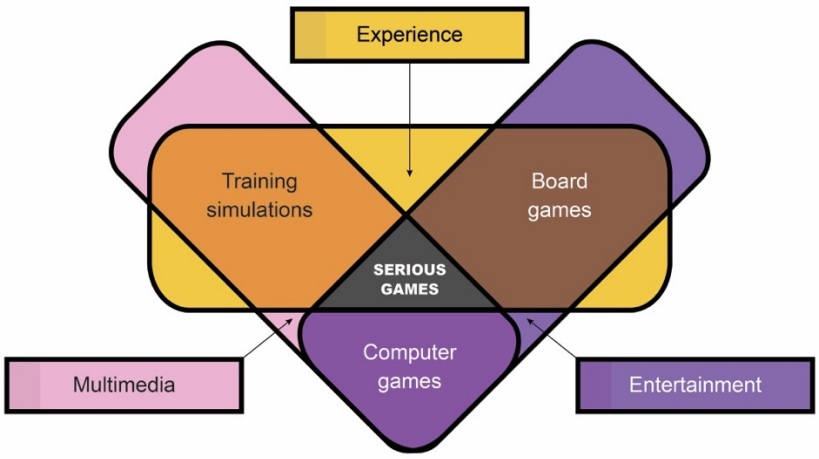


Figure 2-1: Defining serious games (Laamarti *et al.*, 2014)

This study is not aimed at testing the effectiveness of these gaming artefacts but is instead intended to consider the manner in which they are designed and by whom. Noteworthy studies which tread similar territory and place special emphasis on these parties include the following:

- Tsekleves *et al.* (2016) seek to develop guidelines—using literature and theory—to incorporate SGs into education as a set of strategies, procedures and policies. The study places emphasis on the stakeholders and policymakers involved in the implementation of SGs at their institutions/organisations.

- Nadolski *et al.* (2008a) consider the changing educational landscape and the heightened need for tailor-made toolkits to aid stakeholders in developing SGs. This study ultimately introduces the EMERGO methodology and generic toolkit as a means to overcome the shortcomings of leisure game design approaches to creating SGs.

- Susi *et al.* (2007) address a number of issues concerning SGs: the concept of SGs; the positive and negative impacts of these interventions; the markets for SGs; and actors in these markets i.e. North America and Europe.

- Pereira *et al.* (2012) grapple with the challenge of showing a meta-snapshot of SGs and their application domains. They meet this task by devising a taxonomy from survey data regarding (a) current trends, gaps and status, and (b) the facilitators and barriers to SG adoption within the domain of Personal and Social Learning & Ethics (PSLE).

- Mayer *et al.* (2014) look to: (a) establish new means to evaluate methodologies employed in designing SGs; (b) determine the extent to which SGs contribute towards advanced learning; (c) the factors involved therein; and (d) how acquired skills from SGs can be utilised in the real world. Although the research does not specifically focus on the stakeholders involved in SG creation, the latent effects of such a study could drastically impact on their work and functioning.

- Westera *et al.* (2008) examine SGs at the *conceptual* (game configuration/dynamics), *technical* (architecture and building tools) and *practical* (reducing design complexity through structure and feedback) levels.

- Huynh-Kim-Bang *et al.* (2010) examine twenty different SG projects to identify the most beneficial practices which could be expressed in Design Patterns for future projects. The chief aim is to bring together game experts, knowledge experts, and various ancillary stakeholders in the design and production process of SGs. A usability study of a game created using this design pattern is then tested.

The aforementioned literature mainly focuses on providing guidelines and/or frameworks to improve SG development and ensure a smoother design process—usually by directing their efforts to SG media and their effectiveness. This research, instead, hopes to concentrate on the communication strategies that produce these artefacts at the end of the day. Instead of generating a taxonomy of SGs, this study is intended to pave the way to designing a taxonomy of the individual positions, activities and specialisations for SG design at HE institutions.

In terms of the function(s) of SGs, Ritterfeld *et al.* (2009:65-271) broadly expand upon the following categories and underlying purposes thereof:

Education: SGs for learning

- Enhance "dry" learning experiences, i.e. making pedagogy "interesting"
- Hold attention of player, i.e. captivate audience
- Engage deeply with information presented, i.e. call-to-action for user
- Game-based learning, i.e. ludic activity which looks to teach/inform/train
- Gamification, i.e. using gameplay elements in other areas of activity
- Simulation, i.e. approximate imitation of a process or system
- Psychological theories, i.e. motivation and nostalgia
- Communicological theories, i.e. mass media
- Emotional responses, i.e. fear, joy etc.
- Informal and formal settings, i.e. at home or in a dedicated play space

Persuasion: SGs for development

- Lead learners towards a predefined solution
- Self-determination theory
- Childhood development
- Developmental psychology
- Identity construction
- Emotion regulation
- Allow freedom to think
- Critical thinking skills
- Social cohesion and agenda setting

Emancipation and empowerment: SGs for social change

- Health-focused games
- Games for people with disabilities

- Explore culture and social structures
- Consider gender
- Tracking physical activity
- Distraction games for those suffering with physical pain

2.2.1.1 Serious games and related concepts: mainstream search interest over time

Figure 2-2 was created using the Google Trends tool—a website which allows the user to analyse the popularity of search interest using Google Search across various languages and geographical locations across the globe. Graphs are generated to illustrate the search volume of various searches (as terms or as topics) over various time periods.

The visualisation below (Figure 2-2) shows various terms associated with “Serious games” (•) as a search term from 2014 to 2019, as it is compared with: “Teaching games” (•); “Educational games” (•); “Simulation games” (•); and “Training games” (•), respectively. It is important to note that this data represents general search interest over time (SIOT) by the general public who use the Google search engine for searches. As can be seen, “Training games” (•) received the lion’s share of searches during this five-year period, with “Simulation games” (•) coming in a close second. “Serious games” (•) are third in terms of searches conducted during this time, which could be due to its niche nature as it is a term that is mainly used in academic discourse. Naturally, this does not include searches using other search engines, e.g. Yahoo!; so, this trend graph represents but a snapshot of the meta landscape. On the whole, it would appear for Google users at least, mainstream interest in all of these terms has remained somewhat consistent over time. Only a few are trending downwards over time, with the factors impacting thereon currently unknown. Needless to say, the search figures pale in comparison to other subjects and fields but that could be due to the specialised nature of the phenomena under investigation.

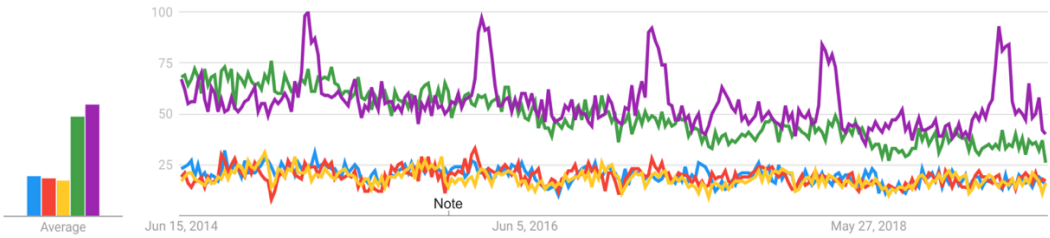


Figure 2-2: A Google Trends depiction of various serious game-related term searches from 2014 to 2019 (Google Trends, 2019)

Interestingly, the percentages per search term for South Africa deviate from the aforementioned search results. “Serious games” (•) received the lowest number of searches with a mere 5% across the spread. “Teaching games” (•) comprised 11%. “Educational games” (•) ranks third with 16%. “Simulation games” (•) made up nearly a third of the searches with 21%. Finally, “Training games” (•) made up the majority with 47% of searches within the five-year timeframe. It may be worth exploring, but "Training games" shows spikes exactly one year apart per year. This may be due to either an annual conference or journal that contributes towards this clear pattern. Figure 2-3 represents the search distribution per territory, with “serious game” interest being the primary search term explored. Morocco, Iran and France were the countries with the largest interest in these (•) terms. It is important to note that for the purposes of this study these terms are synonymous.

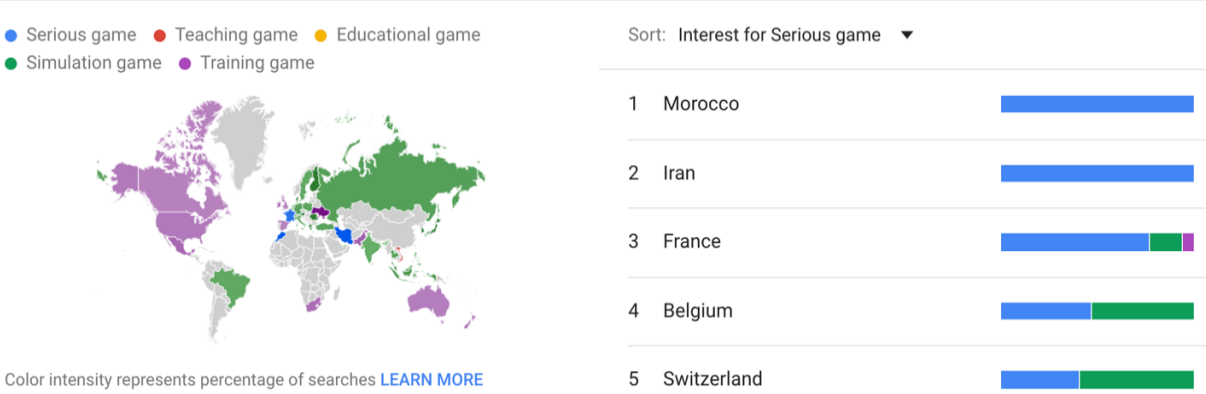


Figure 2-3: A geographic depiction of various serious game-related term searches from 2014 to 2019 (Google Trends, 2019)

2.2.1.2 Serious games and related concepts: academic publications over time

Academic interest from 2014 to 2019 for SGs is equally as fascinating as the mainstream Google search results. The ScienceDirect database search yielded data on the number of publications and peer-review papers published during this time period (Figure 2-4): 2018 had forty-eight (48) results; 2017 yielded forty-four (44); 2016 had forty-one (41); 2015 had similar output to 2017 with forty-four (44); and finally, 2014 had thirty-two (32) publications.

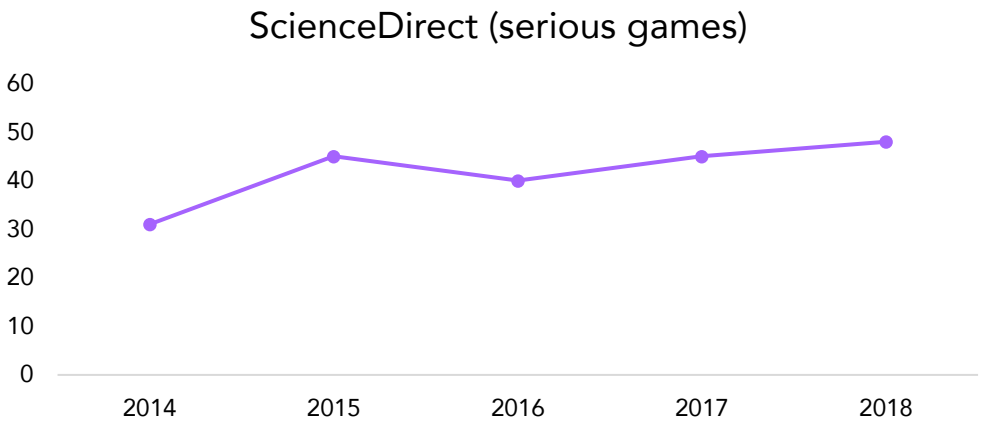


Figure 2-4: Publications with term "serious games" in the title or keywords section from 2014-2018 (ScienceDirect, 2019)

A follow-up search was conducted using the digital library: JSTOR. The trend between 2014 and 2018 is much more pronounced using this library of academic journals and peer-reviewed papers. Bar for 2015, the number of publications with "serious games" in the keywords or title declines with each year.

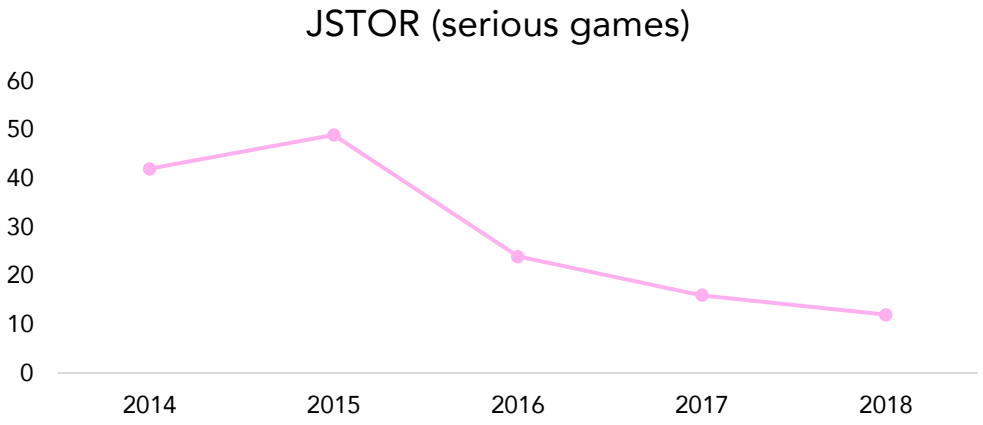


Figure 2-5: Publications with term "serious games" in the title or keywords section from 2014-2018 (JSTOR, 2019)

JSTOR searches (Figure 2-5) for "serious games" keywords and titles reveal: forty-four (44) for 2014; fifty (50) for 2015; twenty-four (24) for 2016; sixteen (16) for 2017; and eleven (11) for 2018. Such a trend is curious, as it may indicate a decrease of interest in the topic or that the subject of SGs has reached saturation in terms of research scope and/or potential. However likely or unlikely that statement may be, one cannot take these visual depictions of

trends by face value alone. The nodes of data are merely representations of advanced search results for each respective year. Such a procedure cannot be compared to a systematic literature review by any means; as such a task would require in-depth curation and exclusion of works that do not fit exactly within the search criteria and subjects under study. These figures therefore only stand as general representations of the current state of knowledge regarding SGs studies between 2014 and 2019.

Section 2.2.2 begins to tackle the multifaceted nature of the research by zooming in on the people who made SGs at SGI-SA—the stakeholders themselves.

2.2.2 Game design stakeholders

**The researcher has decided not to include, list or reference all prior works done by employees of SGI-SA, as it could potentially lead to those individuals being identified. This is done out of respect for their work and to maintain the integrity of the individuals themselves.*

The people involved in developing commercial, digital games is as varied and flexible as the kinds of games they may choose to create. Development teams are typically made up of several individuals taking up positions which fulfil certain roles (Table 2-1) which could be specialised or blended with other responsibilities.

Table 2-1: The typical makeup of a commercial game development team, adapted from Rogers (2014:18-24)

Broader team category	Stakeholder position	Activity (may do one or a combination of various items)	Specialisations and trend(s)
The development team	Programmer	• Writes code • Develops Artificial Intelligence (AI) system(s) • Builds control systems for player interaction • Creates camera system to enable players to view the game world • Does object scripting	Becoming *more* specialised over time and requires competencies in mathematics, 2D/3D graphics, physics, particle systems, user interfaces (UI), AI, input devices and computer networking.
	Artist	• Draws worlds, characters/enemies • Animates game cinematics • Builds 3D models of characters and environments • Paints textures onto 3D models and locations • Creates visual effects • Designs UI design elements • Rigs models	Becoming *more* specialised over time and can be: • Storyboard artist; • Concept artist; • 3D modeler; • Environmental artist; • Texture artist; • Visual effect artist;

Broader team category	Stakeholder position	Activity (may do one or a combination of various items)	Specialisations and trend(s)
			• UI artist; • Animator; • Technical artist; • Art director.
	Designer	• Comes up with ideas and rules that comprise a game • Divulges the difference between games that are *good* and *bad* and must be able to communicate the reasons *why* • Creates and populates levels • Develops how game elements (e.g. economy/treasure) relate to one another • Scripts code to make certain things happen in-game • Specialises play experience(s) • Maintains vision for game and may supervise other designers • Ensures the game is "fun"	Becoming *more* specialised over time and can be: • Level designer; • Game designer; • System designer; • Scripter; • Combat designer; • Creative director. Role and influence vary wildly across the industry.
	Producer	• Oversees the development team • Manages the work of other team members • Makes decisions • Hires/builds teams • Writes contracts • Contributes to game's design • Manages team's work schedule • Resolves disputes • Represents team to upper management/publishers • Coordinates creation of resources • Arranges testing	Role has expanded and may require executive producer to oversee and manage other producers. May require assistants and associate producers to aid with day-to-day tasks. Role and influence vary wildly across the industry.
	Tester	• Playtests game(s) patiently and persistently to find and report faults • Acts as quality assurance and makes submissions to game manufacturers	Requires good communication skills to report problems (bugs) to team. Not a glamourous job. Great gateway position into the industry.
	Composer	Writes and records music for the game	Created music must fit the needs of the game; and may require the submission of an audio résumé.

Broader team category	Stakeholder position	Activity (may do one or a combination of various items)	Specialisations and trend(s)
	Sound designer	Creates sound effects to deliver information to players	Requires creativity and must be able to take direction from people who may not necessarily know what they want
	Writer	• Rewrites design team's story • Writes dialogue for game characters/cutscenes • Sets up instructional prompts to make game objectives clearer and writes content	Hired later in the development process; and is often not a full-time position (freelance): • Technical writer

Interestingly, one seeking to join the video game profession can follow one of two career paths: (a) Design and Development (discussed above) and (b) Publishing. Publishers fund game development studios (teams), oversee game production, deal with legal issues, handle manufacturing procedures, and perform marketing and public relations (PR) operations for the game or studio in question (Rogers, 2014:25). Persons seeking to become involved in publishing activities can hold the following positions and perform the following tasks (Table 2-2).

Table 2-2: The archetypal structure of a publishing team, adapted from Rogers (2014:25-27)

Broader Team Category	Stakeholder Position	Activity (may do one or a combination of various items)	Specialisation Trend(s)
The publishing team	Product manager	• Determines production priorities for game • Acts as intermediary between studio and publisher's legal department • Reviews and approves project milestones • Makes payments to studio • Works with licensors • Works with ESRB to secure a rating for a game	May have far-reaching say in the game's content, as they try to ensure a smooth development process.
	Creative manager	• Provides objective, unbiased view of the game to eliminate game design weaknesses • Delivers feedback on possible game improvements • Consults with marketing and PR departments to provide press materials	Typically, game designer or writer who works in publishing. Level of involvement can vary; depending on publisher.

Broader Team Category	Stakeholder Position	Activity (may do one or a combination of various items)	Specialisation Trend(s)
	Art director	• Helps a team develop a visual style for the game • Advances the visual language of the game • Works with marketing team(s) to put together packaging materials and other visual assets	Similar to creative manager, but only deals with art-related matters.
	Technical director	• Reviews and recommends tools and software to teams • Provides technical support/advice • Help perform due diligence with a new team	Usually come from a programming background.
	Marketing team	• Promotes game (writes copy, designs packaging)	Work with magazines, websites, TV shows, advertising firms.

When comparing Table 2-1 with Table 2-2, one can notice the overlap in responsibilities between game development and publishing undertakings in video game production. This is indicative of the modern production cycle, which has moved from large development teams to smaller (independent or "indie") studios developing and publishing their own media (Rogers, 2014:18). The field, however, is varied and includes both large production houses as well as independent development houses. Increasingly, game dev team members are performing a combination of activities to maximise stakeholder potential, remain within a smaller budget, and publish their games themselves. Specialisation—remaining involved with one specific game-related task or activity—then, is more prominent in large teams; with smaller teams evolving to meet the needs of consumers who expect better-looking, mobile, and enjoyable play experiences by executing a blend of activities at the same time (Rogers, 2014:18-27).

Publishing activities are not limited to those described in Table 2-2, either. A number of subsidiary roles and responsibilities are involved in the promotion and selling of a video game, despite the indirect involvement of these individuals in the creation of these artefacts (Table 2-3).

Table 2-3: The ancillary structure of a publishing team, adapted from Rogers (2014:26-27)

Broader Team Category	Stakeholder Position	Activity (may do one or a combination of various items)
Supplementary Publishing Team Members	Business development staff	• Builds relationships with studios • Holds pitch meetings

Broader Team Category	Stakeholder Position	Activity (may do one or a combination of various items)
		• Reviews game demos
	Lawyer	• Negotiates contracts
	Brand manager	• Generates marketing strategy
	PR manager	• Communicates with gaming magazines • Organises press events
	Quality assurance manager	• Runs test department • Organises and relays bug sheets back to developer
	Talent recruiter	• Looks for talent and helps people get employment
	Game reviewers	• Play games, write reviews, and conduct interviews for magazines and sites
	Licensors	• Makes sure brands are properly represented based on their properties

Table 2-3 expounds upon the stakeholders who have subsidiary roles to play in ensuring a game is successfully released to the general public. A business development staff member, for instance, seeks to develop a growing game studio into a stable unit for future development endeavours. The lawyer deals with the legal and human resource needs of the team. In terms of brand managers, they typically ensure the product/service resonates with target and potential customers. The public relations officers assist these individuals by portraying the game in the best light possible to entice not only the public, but prospective investors as well. Finally, quality assurance looks to prevent defects and errors in manufactured games to avoid any would-be issues with the delivery of the product/service.

It is important to note that video game development and/or publishing teams come in many shapes and sizes. Oftentimes, stakeholder skills and competencies determine the makeup and structure of the studio/team. For example, if the project has considerable graphical requirements it may be in the team's best interest to actively look for designers/artists who can assist them in meeting these conditions. They typically hire someone with competencies in both programming and art if they can find them in this instance. Figure 2-6 is an example of a video game development team where there is little overlap in specialisation.

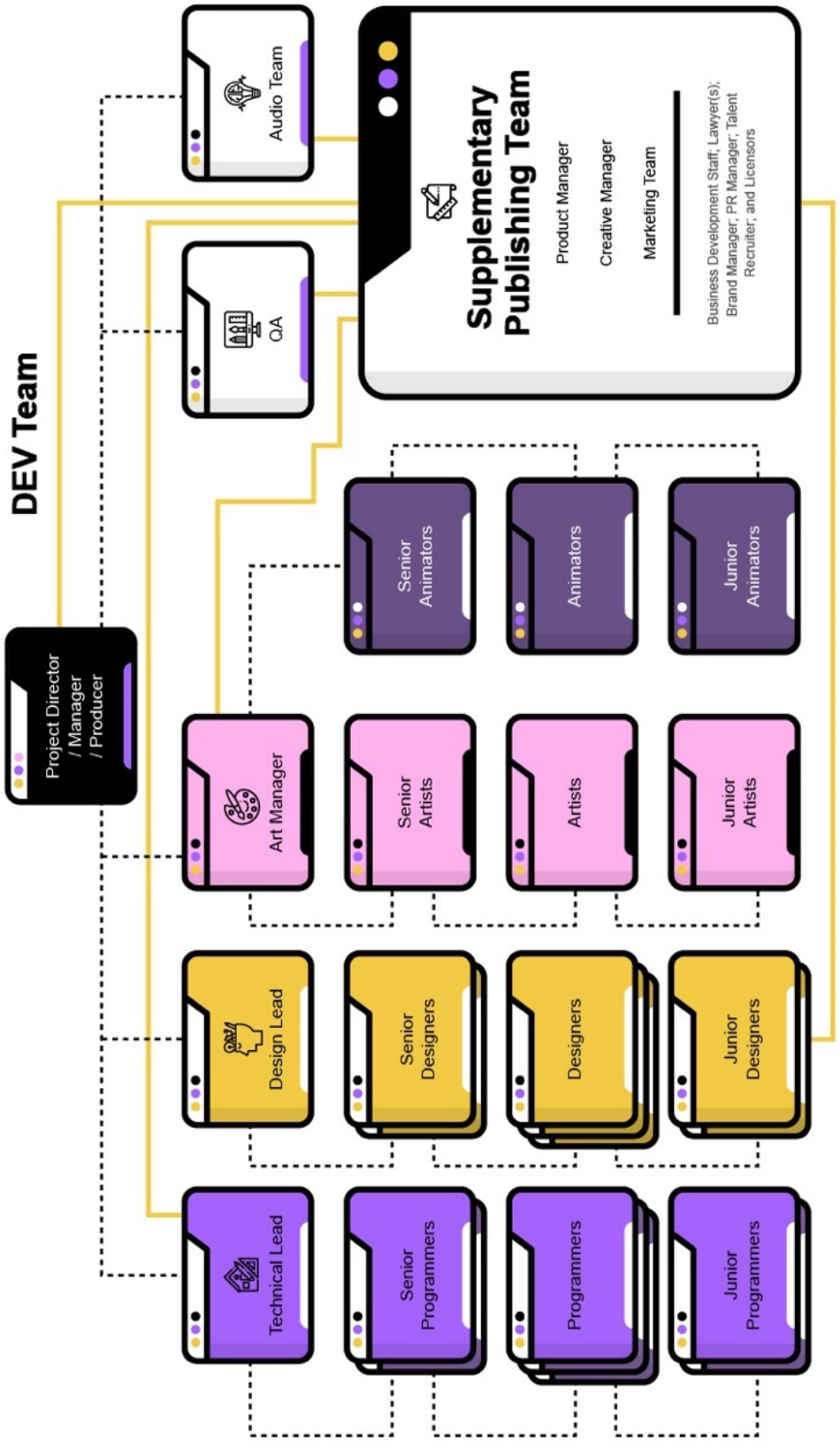


Figure 2-6: An example of a commercial video game development team; blending Table 2-1, Table 2-2 and Table 2-3 together

The stakeholder structure of SGI-SA from 2011 to 2018 would look categorically different from the one presented in Figure 2-1. Two substantially smaller teams operated under the SGI-SA banner at this time: team 1 (2011-2016) consisted of eight (8) people and team 2 (2017-2018) was made up of only four (4). With the aforementioned discussions regarding game production teams in mind, consider the range and variety of skillsets needed by these stakeholders in order to craft effective SGs at SGI-SA. Consequently, all members of the small production and support unit would have had a blend of proficiencies, running the gamut of stakeholder positions and activities shown above.

It would therefore appear that the researcher should give attention to how the stakeholders at SGI-SA themselves perceive this range of aptitudes, as it may elucidate how future teams should be put together. Additionally, it would be remiss of the researcher not to look at previous works done relating to the makeup, nature and function of such SG interest area stakeholders in existing literature. Figure 2-7 gives a general idea of existing works within this research scope.

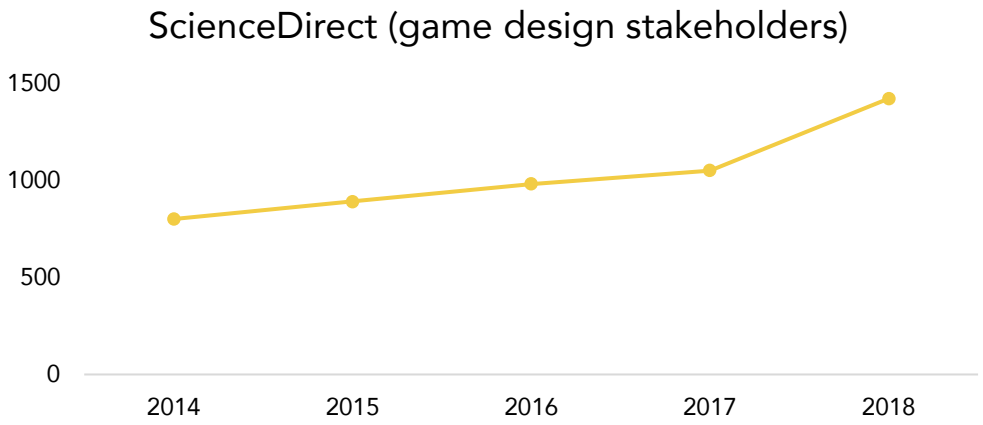


Figure 2-7: Publications with term "game design stakeholders" in the title or keywords section from 2014-2018 (ScienceDirect 2019)

Figure 2-7 is a chart showing the academic research output (papers and journal articles) using the term "game design stakeholders" on ScienceDirect. The numbers appear inflated due to the broad spread of potential themes and study foci using these terms. For instance, a cursory glance at the results obtained during such a search shows that many of the studies focus on using games to train/teach/inform stakeholders of various organisations. Little-to-none of them focus on the people who make these educational games. To reiterate, the majority of results on ScienceDirect for this term deals with game quality; case studies of gaming artefacts; gaming approaches to communication phenomena; multi-stakeholder gamification;

optimisation of gaming sector (unrelated to stakeholders); spectators, stakeholders and groups; and effectiveness tests of various interventions made by academic institutions and/or commercial enterprises. No results were found using the term “serious game stakeholders”. It can thus be deduced that these search results pertain to the “stakeholder” aspects in terms of theoretical underpinnings and scientific enquiry.

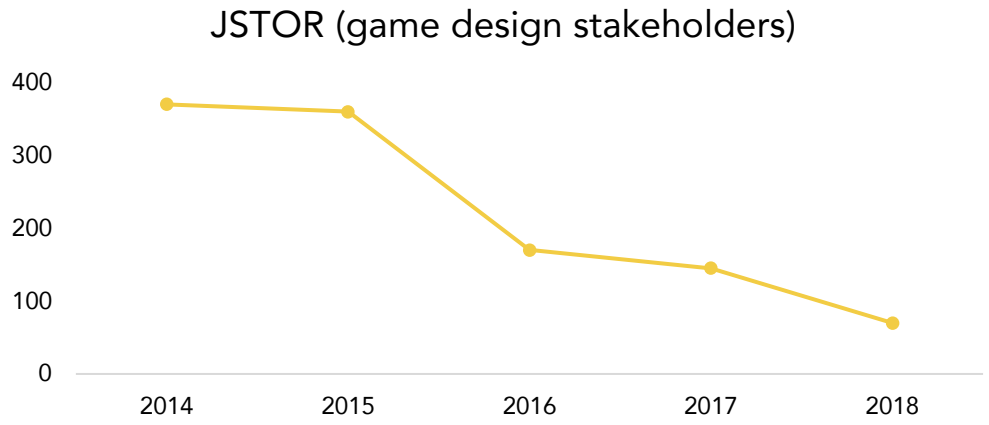


Figure 2-8: Publications with term “game design stakeholders” in the title or keywords section from 2014-2019 (JSTOR, 2019)

JSTOR searches for “game design stakeholders” depicts a different story, altogether. Search results reveal that the number of reviewed publications containing these terms on this database are on the decline. This could mean researchers are satisfied with the current state of knowledge regarding these subjects of study or that interest is dwindling over time. Fortunately, one aspect that has not been impacted by such a dreary notion are the numerous SG interest areas (2.2.2.1) in South Africa.

2.2.2.1 Examples of serious game interest areas in the HE sector in SA

To clarify, these examples are of specialised research entities which aim to conduct academic enquiries on SG production, implementation and evaluation. These are typically associated with a HE institution and are usually financed by one or more income stream:

a) South Africa is home to “Serious About Games”, an SG initiative started in 2016 which seeks to facilitate the growth of the SG sector through countrywide competitions to address various socio-economic challenges in the country. The enterprise is largely funded by the Cape Innovation and Technology Initiative (CiTi), in partnership with Interactive Entertainment South Africa (IESA), 67 Games, the Cape Craft and Design Institute (CCDI)

and is also supported by the Western Cape Government's Department of Economics Development and Tourism (Serious About Games, 2019).

b) The SG design programme at the University of Witwatersrand (Johannesburg, Gauteng) can be considered an interest area doing work in the field of SGs (University of Witwatersrand, 2019).

c) The University of Johannesburg (Gauteng) has undertaken SG projects in the School of Computing. Additionally, the Faculty of Engineering also does innovative work at the same HE institution (University of Johannesburg, 2019).

d) The Worcester Polytechnic Institute (WPI) has ties to CiTi (mentioned in a.), and works to advance and nurture the game development industry in the Western Cape (The Worcester Polytechnic Institute, 2019).

e) SG development has also been undertaken outside of SGI-SA at the North-West University. Examples of these projects fall under TELIT-SA in the School of Economic Sciences and Commerce (North-West University, 2019).

2.2.3 Stakeholder communication

No matter which stakeholder position or activity you describe from Table 2-1, Table 2-2 and Table 2-3, these individuals need to communicate effectively with one another in order to succeed at creating effective SG artefacts. Study of the intricacy of human communication has led to a number of interesting advancements in comprehending the processes involved, including recognition of the various sign-systems employed when communicating; detection of the technologies which can be utilised to support these systems; and acknowledgement of the numerous contexts in which they can occur (Corner & Hawthorn, 1993:5-7). Performing such an inquiry on the verbal, visual and behavioural practices at SGI-SA could therefore be illuminating for similar contexts and interconnected praxes in South Africa and beyond.

In order to undertake such an investigation, the researcher would like to settle on a definition of communication before moving on. This is easier said than done, however, as many researchers and scholars have grappled with the term over decades of study and contemplated its meaning in both every day nomenclature and scholarship alike (Hovland & Weiss, 1951:635-640; Light, 1989:137-139; Nilsen, 1957:10-11); (Burns *et al.*, 2003:186; Mumby & Stohl, 1996:50-60). Communication studies is a wide-ranging field of academic study and scholarly inquiry which is informed by a number of academic disciplines, such as sociology, psychology, political sciences, anthropology, and economics (UMN, 2019). Even today, no

consensus among communication professionals about how to go about defining communication exists.

Contemporary views recognise the impact context has on human interaction, as well as the negotiation and exchange of meaning under social, political and cultural conditions. Human communication—to Tubbs *et al.* (2008:7)—is the procedure in which meaning is created between two or more people. Various models of communication show differing interpretations of the communicative process as sharing meaning both directly and indirectly through the creation and application of symbols in a variety of contexts (Tubbs *et al.*, 2008:7). These models represent varying perspectives of communication and what takes place during a communication event. Three prominent perspectives defining communication are explained below:

1. Linear (technical) view: Messages are transmitted (sent and received) from one individual to another (Shannon & Weaver, cited by Tubbs *et al.*, 2008:9);

2. Circular (process) view: Communication is a multifaceted process in which meaningful messages are exchanged (Shannon & Weaver, cited by Tubbs *et al.*, 2008:9); and

3. Transactional view: Implies that meaning is discussed, mediated and arbitrated between people to establish and sustain relationships (Shannon & Weaver, cited by Tubbs *et al.*, 2008:10-11).

With these early views in mind, stakeholder communication initially centred around information as a commodity to be transmitted between people and not a social process in which meaning is exchanged and consensus reached (Smircich & Stubbart, 1985:724). This perspective originated from the linear model of communication thinking, in which stakeholders were seen as audiences that receive messages disseminated by a firm. The main challenge posed by this outlook was the reliance on coding messages (translating information to represent ideas and concepts) efficiently for the receivers and to simultaneously diminish the noise (psychological, environmental, physical and semantic) that may affect or distort the decoding (understanding or interpreting the information) of the original message (Crane & Livesey, 2003:45). Eventually, this focus shifted to a more feedback-centred view, emphasising the effects messages have on receivers and audiences; as well as the sources of the messages themselves (Crane & Livesey, 2003:46).

The researcher accepts this viewpoint as it corresponds with the research being undertaken: various individuals encoding, bargaining with, collaborating and assigning messages within the SG design context of SGI-SA.

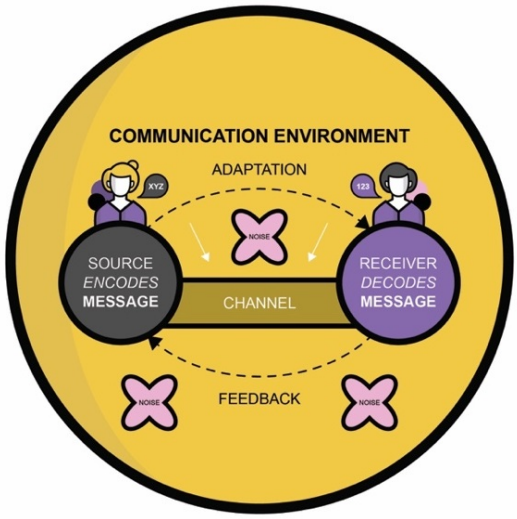


Figure 2-9: A traditional communication process model, adapted from (Crane & Livesey, 2003:31)

Regardless of the view one may choose to adhere to, human communication always takes place within particular contexts. These communication contexts are determined by an assortment of factors, such as quantity of participants; extent to which they can interact with one another; and the environment within which the meaning transfer between two or more people takes place (Tubbs *et al.*, 2008:16). Compellingly, the seven contexts/forms under discussion are not mutually exclusive and can overlap (Tubbs *et al.*, 2008:16):

1. *Intrapersonal communication* involves a single participant—oneself, e.g. internal reasoning.

2. *Interpersonal communication* occurs between close parties or during daily exchanges with others. While this form of communication typically transpires between pairs of people, it can also take place among three or more individuals, e.g. negotiating with colleagues where to go for lunch.

3. *Intercultural communication* entails interacting with people from different cultures, languages and customs, e.g. considering the use of appropriate hand gestures when in the company of an international guest.

4. *Small-group communication* occurs when verbal and non-verbal messages are exchanged between three or more people with the intention of achieving a shared goal, e.g. collaborating with team members during a meeting.

5. *Public communication* usually takes place when an individual intends on transmitting information to an audience in a public space, e.g. pitching an idea for a new tool to the technical manager and their team.

6. *Organisational communication* involves contextual and culturally dependent communication between individuals in a certain work environment with the aim of contributing to or detracting from the functioning of the organisation, e.g. demoing a level/asset from your game to a boss (up) or your manager assigning you a specific task (down).

7. *Mass communication* is mediated, meaning transfer which is both formal and intended for a large audience, e.g. reading a news website during a lunchbreak.

Understanding the multiple contexts of communication helps us to recognise and value the importance of effective communication in both life and work contexts, not unlike the environment at NWU and SGI-SA. However, when we are expected to transmit both verbal and non-verbal messages to one another amongst and between our diverse workforce, the compound structure of human interaction can become even more composite and tricky to navigate (Barker & Gower, 2010:296). Authors such as Tubbs *et al.* (2008:20) untangle this complexity by presenting criteria needed for effective, explicit communication in a modern business world. These experts state that we cannot ascertain or measure the effectiveness of our communication unless our intentions are crystal clear. We may, for instance, seek one or more outcomes when communicating with others, namely pleasure, understanding, influence, action and/or improved relations (Tubbs *et al.*, 2008:20-22). Communication is therefore only effective when the encoded, transmitted stimulus a communicator sends is received, decoded and responded to by the receiver as was intended. If we communicate with a purpose which is fulfilled, we usually say that we are communicating effectively in our specific communicative and literal milieu. Corporate communication, in this study, is an umbrella term which is able to contain all of the abovementioned contexts.

For this theoretical review to answer the research questions identified in Chapter I, the researcher must also consider the various media and mediums employed in these communication contexts by an assortment of stakeholders. Cutlip (2002:41-58) state that three chief avenues for organisational communication are used during internal communications, including: (a) *printed words* (organisational and supplemental publications), i.e. newsletters, pamphlets, e-mail, letters, inserts, manuals and brochures; (b) *spoken words* (verbal communication), i.e. the grapevine, meetings, and speeches; and (c) *images and words*, i.e. video games, teleconferencing, CCTV, video, film, slide presentations, and displays/exhibits.

Investigating which of the three groupings listed above were utilised by SGI-SA stakeholders could help us understand the features, qualities and character of organisational communication in this context. Significantly enough, identifying these avenues for communication can bring us closer to knowing whether or not these employees were content with how the communication was handled.

In order to understand the nature of communication within a given environment, one must not only recognise the features and contexts of communication, but also be able to measure the extent to which stakeholders are satisfied with their own communication practices. Downs and Hazen (1977a:64) describe communication satisfaction as the general feeling an employee has towards their overall communication setting and as illustrating the level of satisfaction said employee feels with regards to their own communication and being communicated with by others. Business communication researchers, such as Pettit Jr *et al.* (1997:95), have shown a link between not only organisational communication and job performance, but with overall job satisfaction as well. Communication satisfaction thus becomes the greatest guiding construct for how the researcher can move forward with this particular study.

To know more, the researcher looks at the macro environment of such investigations—corporate communication. As a unifying framework with which to analyse communications in organisations, we are now equipped with the aforementioned perspectives and theory to review strategic communication and the assorted activities involved therein. These perspectives can, moreover, be applied as a means to ensure effective organisational communication takes place and to move closer to understanding the nature of communication at a HE interest area such as SGI-SA.

2.3 Corporate Communication (CC)

Communication in the workplace is important and necessary, but strategic communication is even more indispensable to CC pundits. Hallahan *et al.* (2007:4-17) explore strategic communication as an emerging paradigm in the 21st century for studying purposeful communications by organisations; and define it as the purposeful communication by organisations, social movements and causes to advance their own mission and reach goals. These authors argue that traditional communication disciplines (i.e. management, marketing, advertising, public relations)—which functioned in the 20th century—are now expected to operate in a postmodern milieu, replete with increasingly "fragmented" audiences and distribution platforms (Hallahan *et al.*, 2007:4). Strategic communication could then act as the novel, go-to approach to studying and understanding communication phenomena in the present day. Moreover, the emerging strategic communication could draw heavily from four

identified scholarship clusters to link management and communication to strategic communication in practice: (a) CC; (b) marketing, advertising and public relations (PR); (c) business communication skills; and (d) general academic studies of organisational behaviour (Hallahan *et al.*, 2007:18).

Touching on both (a) and (b), Argenti (2013:48) points to PR as the precursor to CC and the function thereof to commit resources to manage the flow of communication in situations they had not confronted previously. Corporations, with no predetermined strategy for these communications, archetypically and tactically referred to these functions as *PR* or *public affairs* (Argenti, 2013:48). The introduction of laws to address audience concerns and to meet them with tailored responses necessitated the shift in an everchanging business environment. Over time, old-style PR (i.e. external or internal staff offering communication solutions to organisations through contracted work) became supplemented by the introduction of the dedicated CC department (Argenti, 2013:49). This move resulted largely from increasing expectations from the press and consumer bases for organisations to manage their reputations, take responsibility for decisions made, and to remain transparent and responsive at all times (Argenti, 2013:47-50). As a result, CC emerged as a key facet of the corporate work industry to support corporations, organisations and businesses to develop corporate strategies and execute imperative marketing aspects within and outside of the corporation.

Tench and Yeomans (2014:448) define the perplexing term “corporate communication” as an appeal to all (internal/external and integrated/separated) stakeholders to corroborate and transfer meaningful organisational values and to behave in ways consistent with these principles, while building social capital and maintaining legitimacy throughout. Corporate communicators need to be able to express how their organisations foster the building of bonds, bridges and linkages (social capital) in their communities (Falk & Kilpatrick, 2000:89-93). Moreover, cultivating and sustaining legitimacy appears to explain the principal aim of CC to foster desirable levels of trust and respect from stakeholders, allowing the organisation to continue business operations as it is perceived to be appropriate and desirable within a system of socially constructed societal standards (Suchman, 1995:573-574).

The role of CC, then, is to oversee various communication strategies (internal/external and integrated/separated); conduct media relations; and handle crisis communication within the organisation between staff, managers, etc. Moreover, CC has a hand in reputation management, investor relations, politics and government affairs, as well as marketing communications. There are many moving parts when discussing CC and the managerial functions involved therein is therefore imperative to the survival of an enterprise in the modern age.

If CC provides the theory, ST aligns said theory with practice. Subsequent sections explain how the application of ST can help in understanding and improving communication practices for SG stakeholders.

2.4 The stakeholder typology & stakeholder theory

> …stakeholders are an important part of the project management framework. Stakeholders request projects, approve them, reject them, support them, and oppose them (Schwalbe, 2015:510-511).

The origins of stakeholder-centred literature begin with the work of E. Freeman in 1984, who sees stakeholders as central to how organisations put their strategic planning into motion and ultimately generate value for their stakeholders. Unfortunately, no consensus has been reached since then to settle on a definition for what a stakeholder is or could be (Miles, 2012:286; Wielki, 2011:496-498).

Project management, to Schwalbe (2015:36), is the use of knowledge, skills, techniques and tools in project undertakings to successfully meet project objectives. But who exactly engages in these activities and utilises these skills, techniques and tools? People. Roeder (2013:3) states that business operations have an impact on *people* in an organisation. Such a project management-centred approach is reinforced by the *PMBOK® Guide* (Conchir, 2012:24-25), which defines project stakeholders as individuals, groups, or organisations who have the potential to affect or be affected by an activity undertaken, decision made, or resultant outcome of a project. Roeder (2013:15) goes on to simplify this expansive definition to the individuals who are subject to, are part of, or have decision-making power over a project.

In order to make clear a workable definition of the term stakeholder, Burger (2016:44) designed a grid which collates all of the discerning characteristics of stakeholders as relayed by a number of academics and authors from 1984 to 2011. In addition, the author would include the contributions of Waters and Bortree (2012:126-127) and Wiggill (2017:90) to the matrix; as they demonstrate how interpersonal communication plays a significant role in strengthening relationships between various stakeholders and typically aims at establishing mutual benefit.

Table 2-4: The stakeholder grid, adapted from Burger (2016:44)

	Can affect / be affected	Organisation purpose	All stakeholders = equal	Investors are king	Power / Interest	Significance	Disaggregation / Uniqueness	Disposition	Impact on company	Influence	Legitimacy	Urgency	Mutual benefit
Freeman (1984)	X												
Thompson *et al.* (1991)	X												
Freeman (1994)	X									X			X
Wicks *et al.* (1994)	X	X											
Clarkson (1995)	X												
Donaldson and Preston (1995)											X		
Argenti (1997)			X										
Campbell (1997)		X											
Mitchell, Agle and Wood (1997)					X						X	X	
Bowie (1998)	X												
Sillanpää and Wheeler (1998)	X												
Carroll and Buchholtz (2000)	X												
Ackermann and Eden (2011)						X	X	X	X				
Waters and Bortree (2012)						X			X				X
Wiggill (2017)				X						X			X

A typology rears its head in not only defining *what* the term 'stakeholder' may be referring to, but *how* these people are identified. The Merriam-Webster (2019) definition of the word typology is the study of or analysis or classification based on types or categories. Tench and Yeomans (2014:55) expand this definition as distinguishing various "types of something", typically, through identifying the core elements that differentiate one type of thing from another. Stakeholders can thus be identified, categorised, and prioritised (Roeder, 2013:19-21) into groups to make them easier to communicate with and tailor messages for.

A verb—stakeholding—surfaced from this review. Tench and Yeomans (2014:55) regard organisations as stakeholding communities when discussing how stakeholder groups afford organisations the opportunity to merely *be*. This perspective can be used to identify the stakeholders of a place within a given environment such as a university (i.e. students, lecturers, governors, local residents, local businesses, and education departments) and describe the relation linkages between them. An environmental analysis such as this is useful in determining environmental factors which affect the organisation in question and is followed by an internal investigation to determine the things over which it has control (Tench & Yeomans, 2014:54).

Notably, eight questions are offered by these authors (Tench & Yeomans, 2014:55) to assist us in identifying organisational stakeholders:

- How is the organisation financed, e.g. shareholders, private ownership, loans, etc.?
- Who are the customers for the products and services, e.g. agents, distributors, traders, operators, end users, etc.?
- What are the employee conditions and terms, including status, contracts and hierarchical structures?
- Are there community interactions at local, regional, national and international levels?
- Are there governmental, environmental or legislative actions that impact on the organisation?
- What are the competitor influences on the organisation, e.g. markets, agents, distributors, customers, suppliers?
- What are the supplier influences on the organisation, e.g. other creditors, financial supporters, competitors?
- Are there any issues or potential risks that may be affected by local, national or international pressure groups or interests?

While surveying PR literature a trend emerged: the terms "stakeholder" and "publics" are regularly used in a transposable manner. The difference between them, however, is that

stakeholders usually have loose or intermittent relationships with an organisation, while publics actively take issue with an organisation or foresee prospects and support them (Tench & Yeomans, 2014:8-12). These groups are comprised of individuals who are mutually affected by wider societal advances and setbacks. Three central forces drive these changes, namely: society (e.g. financial crises), organisations (e.g. more women in the working world), and attitudes (e.g. choice of lifestyle) (Smythe, 2017:18). These forces are difficult to understand and their consequences are difficult to predict (Tench & Yeomans, 2014:13).

In investigating the linkages between communication and strategy, Argenti (2013:48) suggests a new term for the interest groups actively involved in engaging with the corporate identity of an organisation—a "constituency". This literature addresses the relationship between corporate communication functions and a constituency-focused strategy. According to Varey and White (2000:5), corporate communication should be utilised to "create a dialogue" with key constituencies to acquire a sounder understanding of their interests. Before this can be done, however, Argenti (2013:49) maintains that analysing an organisation's constituencies is akin to examining an audience to determine: (a) who they are; (b) what they think about the organisation; and (c) what they know about the organisational communication. Consider this in conjunction with the characteristics presented below. According to Argenti (2013:50), the "main characteristics" of organisational constituencies are:

- different depending on size, nature and reach;
- neither fixed nor separate;
- able to change over time; and
- able to blur between constituencies.

For illustrative purposes and to demonstrate the differences between the typologies explored above, Argenti (2013:50) offers examples of organisational constituents (Table 2-5).

Table 2-5: Examples of organisational constituents

Primary	Secondary
• Employees • Customers • Shareholders • Communities	• Traditional media • Suppliers • Creditors • Government (local, regional, national) • Individual bloggers/activists

It would appear that the various fields in communication studies describe their particular interest groups differently. Public relations academics refer to “publics” and on occasion “stakeholders”, while corporate communication practitioners use the word “constituencies” to label their customer, community, investor and employee interest groups. Roeder (2013), for instance, does not refer to S *within* a constituency—they *are* the constituency.

**Going forward, the researcher would remind the reader that the term stakeholder (S) is utilised when referring to the parties and interest groups involved in this particular study in order not to cause confusion.*

Tench and Yeomans (2014) define S as individuals with a vested interest in an organisation’s operations. In order to define stakeholders an organisation should identify groups that have a significant relationship with an organisation. Oftentimes this probe centres around the prioritisation of their importance in terms of financial performance. Otherwise, this list (Figure 2-10) is arranged according to Corporate Social Responsibility (CSR) performance (Tench & Yeomans, 2014).

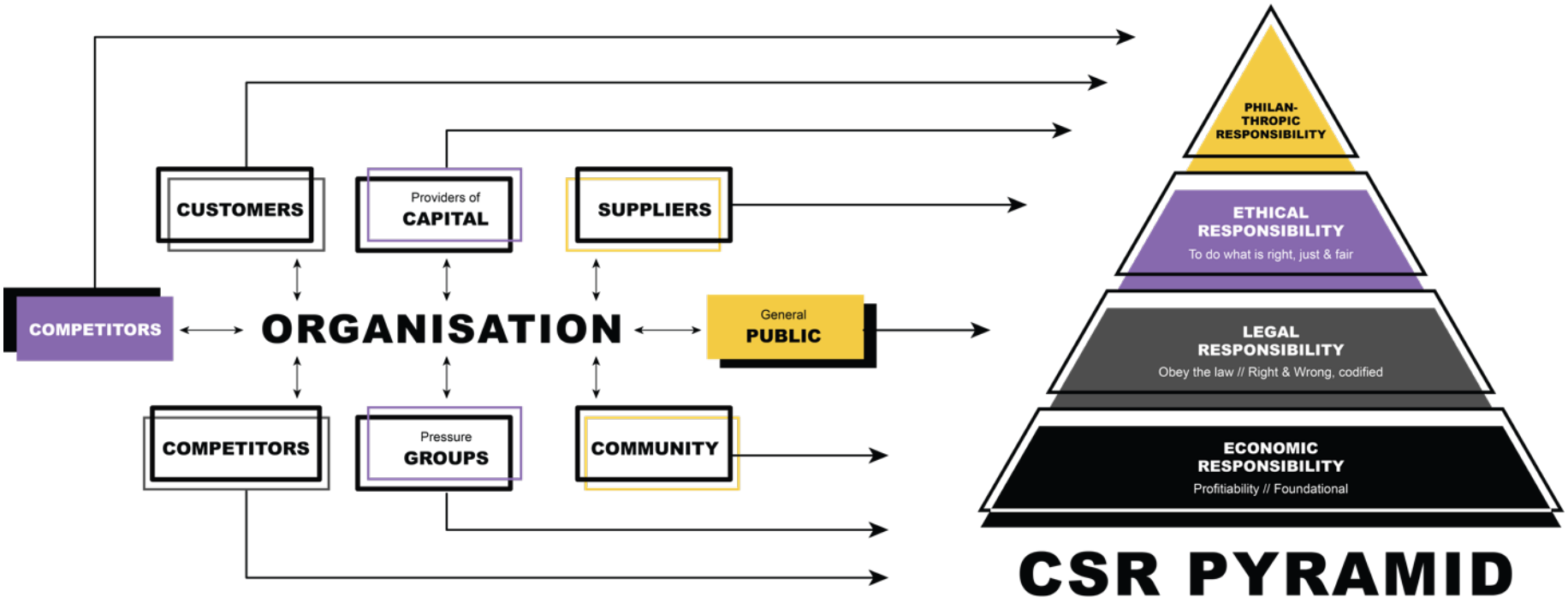


Figure 2-10: A visual representation of the processes in identifying the typical makeup of organisational stakeholders through a stakeholder analysis (Carroll, 1999) and then arranging them according to CSR performance pyramid (Roeder, 2013)

CSR, from this stakeholder view, can enable an organisation to become closer to its stakeholders and improve the two-way flow of communication (information and understanding) (Grunig & Hunt, 1984). This is achieved through the assessment of responsibility for the defined stakeholders and the resulting strategies employed. In assigning these specific responsibilities, one can deduce that stakeholders come in many shapes and sizes, with varying degrees of power and interest.

As the concept of an orthodox ST developed to more adequately explain the nature and nuance of the modern business world, so too did the definitions of S themselves. Freeman (1994:411) describes the early philosophical view of S as lacking *sophistication*. These individuals were seen as blank work groups who lacked any distinct membership conditions. In order for Freeman to provide a clearer delineation of individuals, he suggested engaging in dialogues where S are described normatively, descriptively, instrumentally and metaphorically (Freeman, 1994:413). These parties, then, are seen as complex individuals requiring careful consideration by Freeman.

Donaldson and Preston (1995:67) go on to provide four useful notions which correlate largely with Freeman's perspectives, suggesting that ST and its view of S: (a) provides a model which describes [descriptive] things and can be used to make predictions (p.66); (b) establishes an [instrumental] lens for examining connections between SM and S (p.67); (c) accepts that S are identified [normative] by way of their interests and their intrinsic value (p.67); and as discussed earlier, (d) is [managerial] and requires "case-by-case" decision making (p.67).

Jones (1995:404-405) cites the shortage of an accepted, integrated framework for the areas of interest in society and business as the primary reason for the emergence of ST. He goes on to synthesise the various existing models (at the time), presenting the amalgamation of the corporate social performance model, social control of business model and stakeholder model as a unified extension of the prevailing theory.

Stakeholder theory's function, according to Donaldson and Preston (1995:67), is multidimensional and administrative in nature. It does not just outline existing scenarios or foresee probable cause-effect relationships; its purpose is to validate *attitudes*, *structures* and *practices* that, when regarded at the same time, make up SM.

2.4.1 Stakeholder management

> Many of the concepts related to communications and human resource management also apply to stakeholder management, but unique activities are required to perform good stakeholder management (Schwalbe, 2015).

The literature regarding the emergence of S as having increased power and influence point to them having the ability and the choice to make a difference. Someone who can or does make a difference in a project can be considered a stakeholder (Roeder, 2013). Projects themselves are momentary endeavours, requiring managers to learn how to effectively launch, oversee and disband a team of stakeholders. Operational management stands in contrast to this, because it is more “permanent in nature” (Roeder, 2013). Project management, then, focuses on delivering results and moving on to the next project, often without a defined beginning or end. This leads us to a significant discovery in terms of reviewing the literature: the notion of “transient stakeholders”.

Roeder (2013) holds that the temporary nature of projects results in stakeholders coming and going as the project moves through its various phases. For example, once a project is complete the team is disbanded.

The stakeholder model of strategic management suggests that any individual or group holds and maintains authentic interests in an organisation to obtain benefits from them. Cornelissen (2017:32) also suggests that no priority is given for any one set of interests and benefits over any other. This stake in the organisation can be financial, market-based or otherwise. An interdependency is painted between organisation and stakeholder group, so if an organisation can influence a stakeholder so too can a stakeholder affect the organisation—leading to a relationship fortified by mutual dependency. This implies that stakeholders should be managed, as they make decisions which impact on the overall wellbeing and functioning of a business entity.

2.4.2 Stakeholder diagnostic tools

Stakeholder diagnostic tools are used to strategically analyse stakeholders in an organisation based on their authentic or prospective influence on management’s core mission (Goodpaster, 1991:59) and could aid the researcher in identifying and categorising SGI-SA’s stakeholders.

2.4.2.1 Stakeholder groups

Roeder (2013:51-101) identifies and describes five (5) distinctive groups of S, including: (i) project team S; (ii) executive S; (iii) external S; (iv) conditional S; and (v) phantom S. These are the groups that inform various elements of the empirical study, such as the survey items. If an overview of the nature of communication at SGI-SA can be drawn from the acquired results, these groups are considered as a diagnostic tool that can help categorise and illustrate the makeup of the project team and their communicative practice.

(a) Project team stakeholders

This group of S are likely the group that project managers spend their most time working with and who typically complete the greatest amount of work (Roeder, 2013:67). Project team members are thus the most important S group to keep inspired, updated and engrossed in all project affairs.

(b) Executive stakeholders

Executives, customers and executive sponsors usually have influence, authority and decision-making power over a project (Roeder, 2013:86). The project manager has to make sure that the project goals are aligned with the expectations, needs and wants of these S. Roeder (2013:77) maintains that communication with these S is vital in relationship-building and efficiently engaging these individuals.

(c) External stakeholders

The external S group includes a vast array of people that are involved or subject to choices made by the organisation. This includes vendors, consultants, trade unions, associations, celebrities and government regulators (Roeder, 2013:87-88). Bonds between the project team and these outside S should be nurtured and maintained by the project manager.

(d) Conditional (subject-to-change) stakeholders

Change is brought about as projects are undertaken. Anyone who is impacted on or influenced by the project is known as a S, but the membership in the group is subject to change (Roeder, 2013:90). If an individual makes use of a project output (product, service, process), they are considered to be a part of this S grouping.

(e) Phantom stakeholders

The final group of S are all of the individuals project managers have yet to identify who may have an effect on overall project success (Roeder, 2013:97-98). Once these S are known, they should be categorised, prioritised and managed the same way any of the other groups are.

These S groupings are useful as they can inform how the overlap between game design activities affects a stakeholder's position in terms of communicative priority.

2.4.2.2 Stakeholder salience model

Mitchell *et al.* (1997:872-879) propose a model that individuals in managerial positions can use to pay particular kinds of attention to various classes of S to achieve predefined objectives. The stakeholder salience model is a tool which measures the visibility and importance of a stakeholder relative to their power, legitimacy and urgency—their 'salience' (Cornelissen, 2017:47). 'Power', here, refers to the authority a S has over an organisation; 'legitimacy' is the validity, authenticity and acceptability of the claim laid upon an organisation by a S group; and 'urgency' depicts the extent to which S claims require immediate/timely action. S can thus be identified, prioritised and engaged according to the aforementioned three attributes, culminating into seven distinct types of S as illustrated by the Venn diagram in Figure 2-11.

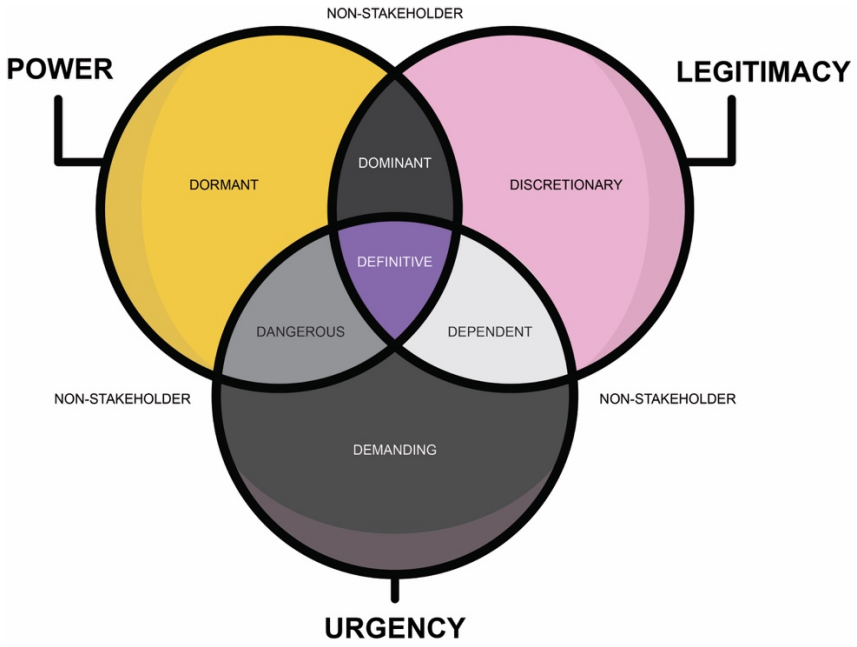


Figure 2-11: The stakeholder salience model (adapted by Cornelissen, 2017:48)

The following discussion expounds upon the model and the seven S types as they are described by Cornelissen (2017:46-49). The first three are depicted as *latent* S, as they possess only one of the three identified attributes:

a) *Dormant stakeholders* (■) are individuals whose power remains dormant because they have no legitimate relationship or urgent claim with regards to proceedings. Project managers should not let the potential for this group of S to acquire a second attribute

(urgency or legitimacy) go to waste—as this latent power could potentially allow this group to impose their will. Prospective customers are an example of this S type.

b) *Discretionary stakeholders* (■) have no pressing claims or authority to influence the organisation and its undertakings. Corporate charity recipients fall under this type as they possess legitimate claims based on their interactions with the organisation in question.

c) *Demanding stakeholders* (■) describes S who are unwilling and/or unable to attain the power or legitimacy required to make their organisational claim more salient in nature, and use their urgent claims to move beyond latency. Unfortunately, the weak and/or illegitimate claims of these S usually remain unconsidered by management or communication practitioners. Demonstrators camping near the site of the business are an example of this S grouping.

The next three groups are depicted as *expectant* S, as they possess two of the three identified attributes:

d) *Dominant stakeholders* (■+■) are equipped with both powerful and legitimate claims, giving them heightened levels of influence on the organisation. Customers, employees, owners and institutional investors are all considered S who consistently transact with or have binding relationships with the organisation. These S hold this authority because they could choose to deny delivery of their particular investment (i.e. labour) at a given time. The local authorities could be seen as this type of S if one is constructing a large building at a specific location where they have jurisdiction. They do not have urgent issues with this case, but they do have power and legitimacy.

e) *Dangerous stakeholders* (■+■) lack legitimacy and may choose unlawful courses of action (i.e. violence, terrorism or coercion) to advance their claims. Extreme measures are employed by these S to try and validate their powerful and urgent claims. Employee sabotage (i.e. purposefully doing work slowly) is an example of this group.

f) *Dependent stakeholders* (■+■) have inadequate power and often rely on others (the media, lobby groups, political representation) to relay their urgent messages and advocate their legitimate claims—on their behalf.

The seventh and final class can be identified as:

g) *Definitive stakeholders* (■+■+■) require priority, attention and deliberate communication from the organisation. Their concerns should be attended to immediately, as these S have urgency, legitimacy and power. Top management of an organisation typically fall into this category.

Communication practitioners and management have an overview of which S need to be communicated with once every S has been classified according to their salience. Magness (2008:198-190) applied the model in a study looking to test whether or not power, legitimacy and urgency are mutually essential preconditions for determining S salience. The study looked at two unique decision-makers: shareholders and managers in the context of two accident events (within the Canadian mining industry). Causation between S classification attributes and communicative events was shown, as all three attributes were present when noteworthy change in share behaviour was observed by the shareholders; and the same was true when noticeable variations in disclosure from managers took place (Magness, 2008:190). Despite confirming many of the underlying assumptions made by Mitchell *et al*. to operationalise ST, Magness (2008:177-190) argues that other factors—ethics, timeliness and law—are at play when gauging S salience. Furthermore, legitimacy was the attribute identified to be the greatest determining factor in who or what truly matters in the mind of the decision-makers under study.

2.4.2.3 Power and interest index

Stakeholders can also be classified according to four recognised attributes: power, impact, interest and influence. According to Roeder (2013:31), 'power' refers to a stakeholder's level of authority; 'impact' is a stakeholder's capability to bring about change; 'interest' refers to a stakeholder's degree of concern for the results and products of a project; and 'influence' is a stakeholder's measure of involvement in the project itself. Roeder (2013:32) recommends a prioritisation plan to strategically allocate how much time a project manager should invest in all S. Categorising identified S according to two of the aforementioned stakeholder attributes —power and interest—and the accompanied managerial duty is depicted in the two-by-two grid below (Figure 2-12).

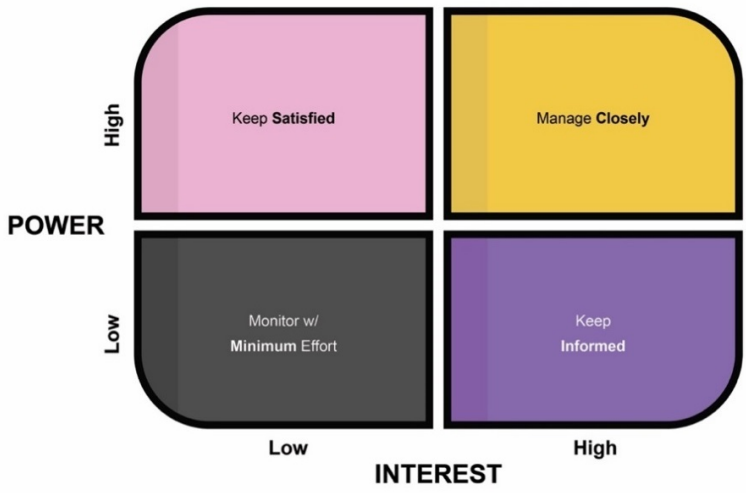


Figure 2-12: The Power and interest matrix (Roeder, 2013:32), adapted from the *PMBOK® Guide*

Stakeholders that fall in the top right quadrant (■) of Figure 2-12 are those key players who have both high power and high interest in relation to the outcomes of the project, and should be managed meticulously by project managers. Project managers and developers are stakeholders in this quadrant. The top left quadrant (■) depicts S with great degrees of authority, but low levels of interest in proceedings. Managers should ensure to keep these S gratified due to their perceived and actual power. Finance and legal people working on a project are examples of these stakeholders. On the bottom right (■) we see S who should be kept up-to-date regarding project developments because of their high interest and low degree of power. Outsourced supplementary stakeholders (e.g. training managers) fall within this prioritisation level. Finally, the quadrant on the bottom left (■) depicts S which require a minimal amount of dedicated time and energy. Testers would initially be in this quadrant, but could move to the bottom right with time.

Parallels can be drawn between mapping devices/diagnostic tools such as the power-interest matrix and the salience model. Cornelissen (2017:51) maintains that both seek to assist communication practitioners and project managers devise suitable communication plans and strategies through the identification and categorisation of S. They are useful because they allow us to have an impression of the makeup and structure of organisational and project S in terms of their influence and investment in proceedings. We can then be informed about who requires constant communication and which S need only be kept informed (Cornelissen, 2017:51).

2.5 Zooming in on the interest area that was SGI-SA

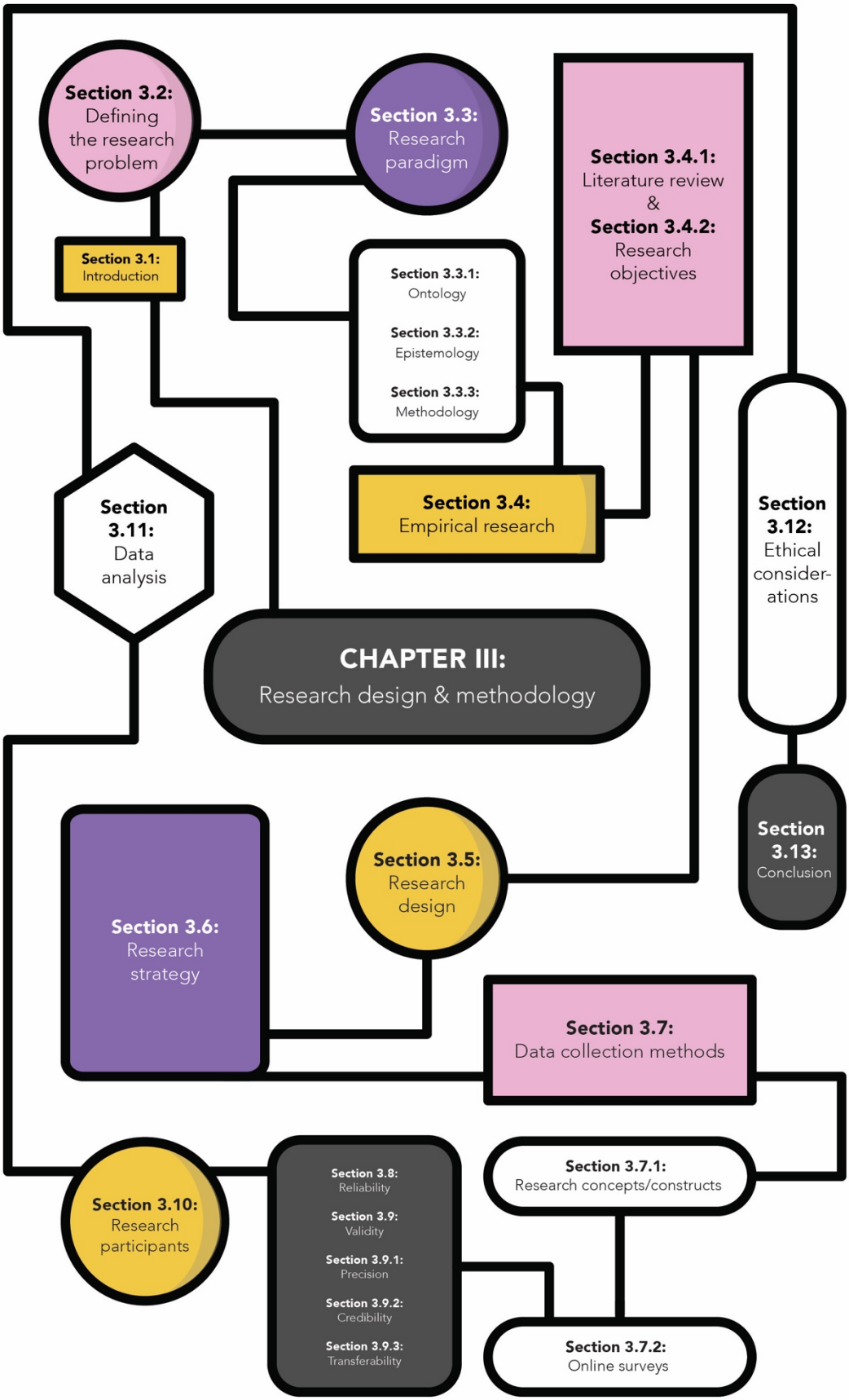
So, what was known about the stakeholders at SGI-SA? The following list describes these particulars as they are known to the researcher:

- For one, it is possible to contact all of the stakeholders who formed part of the teams when they were operational, whether remotely (digitally) or in-person.
- The researcher only knows the basic information of each SGI-SA member's role in the team and cannot report on whether they fulfilled various functions or not.
- SGI-SA is comparable to an independent video game development studio.
- Applying leisure game principles to SG development may not be the best practice as the contexts, operational structures and stakeholder roles differ.
- Stakeholder theory has tools capable of informing the empirical aspects of the research to develop a taxonomy of stakeholders, as well as their roles, activities and specialisations.

2.6 Conclusion

This chapter aimed to: (a) demonstrate the significance of stakeholder theory in understanding the constituencies/stakeholders of an organisation; (b) reflect the current state of knowledge with regard to stakeholder definitions/categories in SG literature; and (c) discuss serious games, as well as game development structures in commercial gaming. The theoretical exploration of literature identified that there is a great lack of research examining the characteristics, responsibilities and relationships of the various stakeholders involved in SG design and development in the South African HE context and beyond. The findings presented in this chapter suggest that these interest groups lack any form of accurate, explanatory denotations to support them in identifying themselves, distinguishing between their peers, and executing their work. Through the association between their own descriptions and those of other relevant S, they can more easily form a frame of reference for themselves and others. Fortunately, there exist various stakeholder diagnostic tools which—if applied correctly—could facilitate unearthing the experiences and corporate practices of these stakeholders and their work done at SGI-SA.

Chapter III discusses the methodology, theoretical and practical implications/aspects of the study.


Section 3.2: Defining the research problem
Section 3.3: Research paradigm
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Section 3.1: Introduction
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CHAPTER III: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The overarching aim of this research is to explore perceptions of SGI-SA stakeholders involved in developing serious games as part of an interest area at NWU, Vanderbijlpark campus. Chapter II acknowledged and discussed a wealth of literature pertaining to corporate communication as a field of theoretical inquiry and professional practice as it relates to a multidimensional stakeholder theory for stakeholder management, highlighting the numerous ways in which organisations can not only identify their stakeholders, but categorise and prioritise their positions, activities and specialisations as well. Just as the presented stakeholder diagnostic tools enable project managers and communication practitioners to get to the heart of activities involved in stakeholder relations, i.e. stakeholder communication, Chapter III endeavours to position the research within a digestible framework for the reader to follow and understand regarding the practical implementation of the empirical research design and methodology.

This particular framework for the empirical study is presented as follows: definition of the research problem; discussion regarding the research paradigm employed; explanation of the empirical research approach; description of the content analysis research design; details about the research strategy; elucidation on the chosen data collection method; discussion on reliability; discussion on validity; illustration of the research participants; exposition of data analysis procedures; and ethical considerations.

What is already known about this topic?

- Qualitative content analysis wishes to preserve the beneficial aspects of quantitative content analysis but allows for deeper interpretation (Mayring, 2004:161). Content analytical units are developed by studying communication inferences of the communicators (experiences, opinions and feelings), settings surrounding text production (survey responses), the social-cultural background (familial context), and the effect(s) of the messages sent by participants. Such robust techniques equip researchers with the tools needed to analyse perceptual constructs that prove challenging to study using traditional, archival methods (University of Georgia, 2019b). Generally speaking, content analysis comprises systematic, rule-guided text

analysis that tries to uphold methodological strengths of quantitative content analysis and supplements them to fit within the broader qualitative framework.

- Qualitative research shapes value-laden inquiry around the interpretation of complete understandings and experiences of entities within their own socially constructed environments (Richard, 2013:38-40).

What does this section add?

- Introduces the research paradigm, and expounds upon the ontology, epistemology and methodology employed in the study;
- Motivates the qualitative methodology employed;
- Discusses content analysis and how it impacts on the research in question;
- Describes the ways in which the research is executed with particular emphasis placed on the chosen research instruments, data, analysis, and limitations; and
- Expounds upon ethical procedures and considerations impacting the research.

3.2 Defining the research problem

The stakeholders at SGI-SA needed to be skilled communicators in order to design and develop effective serious games (i.e. *Mandela27*, *Oculift*, *ExMan*, *StoryTime*) for their target audience: students at NWU, Vanderbijlpark campus. In Chapter I the researcher proposed that being an effective communicator is as important as any other design competency in the context of serious game creation. Having efficient communication skills, knowledge and awareness could prevent stakeholders from repeating designs, misinterpreting feature complexity, using unsuitable communication channels, or establishing a suitable rapport with play testers, to name but a few. The problem, then, is that stakeholders at SGI-SA required a set of communication proficiencies in order to do their job capably. Regrettably, the serious game production unit has never (prior to this study) been studied in terms of the nature of communication amongst and between stakeholders, especially regarding their positions, activities and specialisations in this context. A post-mortem of the now-defunct SG interest area could potentially reveal positive insights for current and future teams.

Boyle *et al.* (2016:188) reflect on how the development of serious games is often complex, challenging and costly; and it has been established in Chapter II that the same is true for production at SGI-SA. Stakeholder teams from 2011 to 2018 were made up of a variety of stakeholders from differing backgrounds and work experience communicating with each other via conversations, writing, visuals, design animatics and prototypes to create intricate artefacts for educational gain (Argenti, 2013:110).

No research has been done regarding stakeholders at SGI-SA, prior to the commencement of this study, of its members, its processes, or more importantly for this study: the nature of corporate practices (positions, activities, specialisations) and the management thereof by its stakeholders. The institute had limited resources to operate and execute on a daily basis, and consequently required a strategy to manage its stakeholders and their communication successfully. This is where communication theory and its countless potential for intervention and evaluation come in. Corporate communication theory and stakeholder-centered approaches can equip future serious game production teams with an impression of which stakeholders need to be communicated with, as well as the *What?*, *Why?*, *Where?*, *When?*, and *How?* of these structures and their management.

3.3 Research paradigm

Yvonne Feilzer (2010:7) maintains that research paradigms provide an organising structure for greater social phenomena by positioning/directing research efforts and philosophical stances. Hammersley (2013:26) maintains that the interpretivist paradigm bred from the fact that methods utilised in physical sciences cannot be used when trying to understand social sciences. This is due to how humans act based on their interpretations of the world; and the world does not do (react) in a similar way. Significantly for this study, interpretivism recognises the utility of qualitative methods of research and the resultant knowledge creation in untangling society and social life (FeilzerYvonne Feilzer, 2010:14). The researcher is hence required to remain adaptable and open to unforeseen interpretivist research potential and the chance to acquire unexpected data from unidentified sources. Finally, the research paradigm for this study is broken down as follows:

(3.3.1) Ontology – *What is reality?*

(3.3.2) Epistemology – *How do we know _____?*

(3.3.3) Methodology – *What procedure(s) do we follow to acquire knowledge?*

3.3.1 Ontology

An ontology looks at the nature and structure of phenomena, independently from their perceived or actual existence (Guarino *et al.*, 2009:1). The nature of reality is thus regarded according to its worth in varied and unpredictable scenarios. This research ultimately seeks to better understand the nature of communication between and amongst stakeholders at SGI-SA through the theoretical exploration of corporate communication principles and, more specifically, stakeholder theory; it intends to obtain the personal accounts of and examine the perceptions of the stakeholders in question. Such a view of the world is one where there is no single, agreed-upon reality, but a multitude of truths which become understood through purposeful observation and understanding of the experiences of research participants. Consequently, reality is viewed as a social construct in this particular study, as a single phenomenon may have many interpretations. The context of SGI-SA makes the interpretivist research paradigm, and in particular content analysis as a method to analyse the gathered data (i.e. to examine the nuances of organisational behaviours, stakeholder perceptions, and societal trends) the optimum means to solve problems and to discover more about the given area of study: stakeholder activities, positions and specialisations.

3.3.2 Epistemology

Epistemologically speaking, the research uses interpretivism to address questions regarding the scope, nature and sources of knowledge (DeRose, 2005:1). This view makes use of suitable methods to understand perceived knowledge and to focus on a specific context. Consequently, the researcher wishes to gather subjective realities as they are interpreted and relayed by participants using qualitative surveys to uncover the meaning of events and activities at SGI-SA. The researcher acknowledges and affirms that the use of this method of understanding and measuring reality is necessary to learn more about communication and corporate practices in this environment. Human intervention and interpretation of our society is therefore how these singularities can be unpacked/understood.

3.3.3 Methodology

According to Du Plooy (2009:21), methodological assumptions provide solutions to researchers in terms of the most suitable means to gather, analyse and interpret data when exploring communication phenomena. A methodology, therefore, describes one's plan of action for their research to be conducted scientifically. Interpretivism employs field research to study human beings in their environments (Orlikowski & Baroudi, 1991:16). The researcher asserts that utilising an approach which concentrates on understanding and interpretation—

content analysis—results in answering the research questions with the most exhaustive, thorough and detailed information possible. In doing so, qualitative methods, techniques, practices and strategies as per Sarantakos (2012:50) are employed in this research project. Such a methodology (Figure 3-1) has been chosen for its suitability to improve the capacity of the chosen empirical methods (online surveys) and strengthen the quality of the research findings, validity and generalisability (Sarantakos, 2012:54-55).

Stemler (2001:137) asserts that content analysis extends beyond mere word counts, due in large part to the meaningful and rich insights coding and categorisation of gathered data hold for studying social phenomena and/or relationships. Moreover, coding in this particular study can be referred to as emergent coding, as categories are established following primary examination of the survey data. A blend of sampling units (sentences, paragraphs), context units (statements of purpose) and recording units (ideas, thoughts, feelings) are utilised to ensure the method is as meticulous as possible in recording/inferring perceptions.

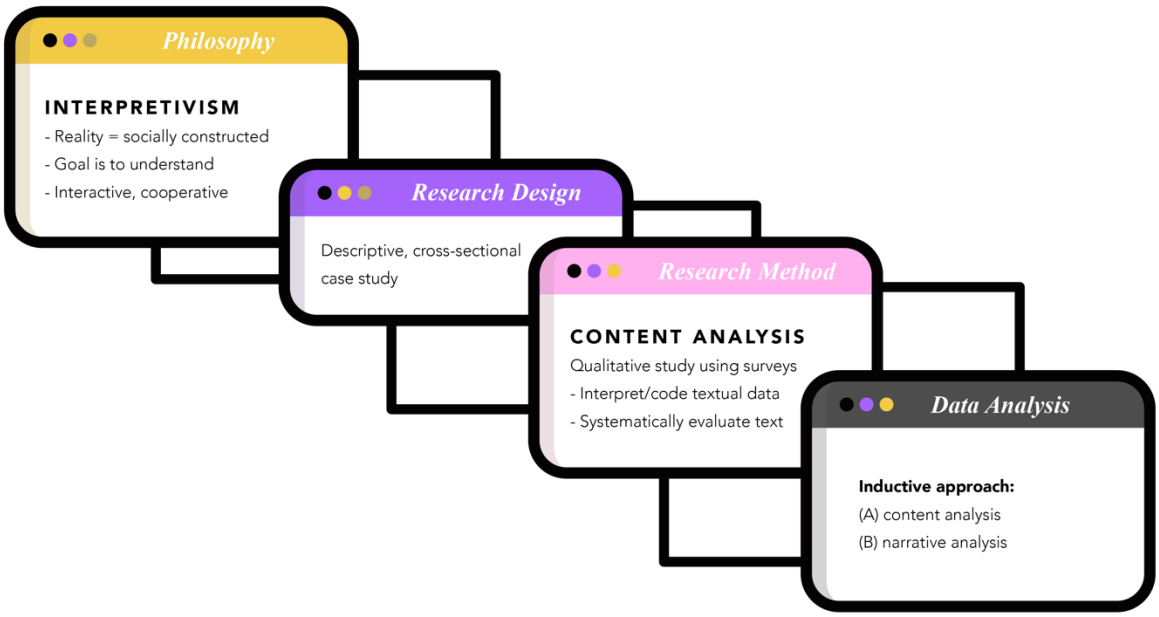


Figure 3-1: Visual summary of the chosen research methodology for this study

So, why is a qualitative approach being employed in the study? The following underpinnings address this question:

- Not much is currently known about the interest area that was SGI-SA. Establishing an adequate understanding thereof could contribute greatly to future serious game interest areas.

- In doing so, the researcher needs to make sense of intricate and multifaceted social processes through analysis of motivations by study participants.
- The researcher must learn more about the beliefs, motivations and opinions of the participants and their experiences at SGI-SA regarding their positions, activities and specialisations.
- Once done, inferences which are both replicable and valid emerge from the data through the methodical reading and analysis of survey responses from SGI-SA stakeholders.
- Finally, the researcher and the reader should deeply understand the phenomena of serious game stakeholders and interest areas in HE contexts.

3.4 Empirical research

The researcher analyses communication in this case study, as it relates to SGI-SA's operational structure and the context of serious game development; a complete system level analysis must be accommodated by the philosophical assumption(s) of the research. Corporate communication, auspiciously, has advantages beyond "career advancement" and "corporate success" that lean towards this particular communication audit, which investigates stakeholders, issues and communication problems that are internal to SGI-SA (Cornelissen, 2017:10; Du Plooy, 2009:303). This theoretical and practical communication context enables communication practitioners and senior managers to take critical perspectives when recognising, diagnosing and treating communication-related management problems with appropriate courses of action/strategies. Cornelissen (2008:10) breaks down the power of such perspectives in allowing communication practitioners and managers to:

- Understand and take charge of events that fall within the corporate communication sphere;
- Determine which events are outside of their control;
- Recognise how they can contribute to other functional areas within the company; and
- Find new strategies the company could potentially have used and should use in future.

Social researchers are increasingly confronted with rapid social change and the resulting diversification of life often necessitates the formation of new social contexts and perspectives. Consequently, traditional deductive methodologies rely on "the differentiation of objects"—developing research questions/hypotheses from theoretical models and testing them against empirical evidence (Flick, 2014:12). Social contexts demand that researchers "sensitize concepts" rather than start from theories and test them (Flick, 2014:98). Inductive approaches

to social science research hence try to generate new knowledge and theory from emergent data.

Employing the scientific method means that phenomena under investigation can be measured, observed and classified (Du Plooy, 2009:18). This regularly involves accumulating data from the field through the sharing of experiences or from direct observation. Significantly, the trustworthiness of the accumulated measurements are contingent on how the research concepts, constructs, propositions and relationships are defined and made clear by the researcher (Du Plooy, 2009:18).

3.4.1 Literature review

Chapter II (Section 2.1) involved the accumulation and synthesis of prevailing information and knowledge relating to the research topic—serious game stakeholder theory, management and communication. The aim of this literature survey was to answer three of the research questions posed in Chapter I (Section 1.4), by finding material associated with the conceptual foci and practical implications of a number of queries.

The transactional view of SGI-SA stakeholders adopted for this study is feedback-centred; meaning that communication at the organisation certainly sought to mediate, arbitrate and discuss meaning between and amongst various employees. Seven unique communication contexts likely overlapped at SGI-SA, including: intrapersonal-, interpersonal-, intercultural-, small-group, public-, organisational- and mass communication. This collection of theory aids the researcher in understanding whether or not the communication at SGI-SA was effective and whether or not there is any overlap between their positions, activities and specialisations. Despite not knowing exactly how communication was handled at SGI-SA during its years of operation, it is safe to assume (from literature) that the stakeholders in this environment operated within these communicative boundaries, adapting to them as needed.

3.4.2 Research objectives

The aims of the study discussed in Chapter I can be summarised as follows:

a) To theoretically explore serious games and stakeholder theory by way of a literature review to ascertain the extent to which stakeholders at SGI-SA can be categorised into functional categories for serious game design.

b) To determine, through analysis of online survey responses, the ways in which functional stakeholder categories assist in determining the positions, activities and specialisations for SG stakeholders.

c) To shed light on the perceptions of SGI-SA stakeholders regarding their own organisational practice, communication and the efficiency of operations through induction of open-ended survey codes/categories.

In fulfilment of these objectives, the researcher explains the plan of action for this research below.

3.5 Research design

De Vaus (2001:8-9) states that research designs are significant since they provide a blueprint for studies to reach their objectives. Creswell *et al.* (2003:220) support the idea that social research requires structure to make sure the evidence obtained from the data collection and analysis enables researchers to answer their research questions. Therefore, a research design is the cogent work plan and structure of the research inquiry. The plan for this study can visually be depicted as follows:

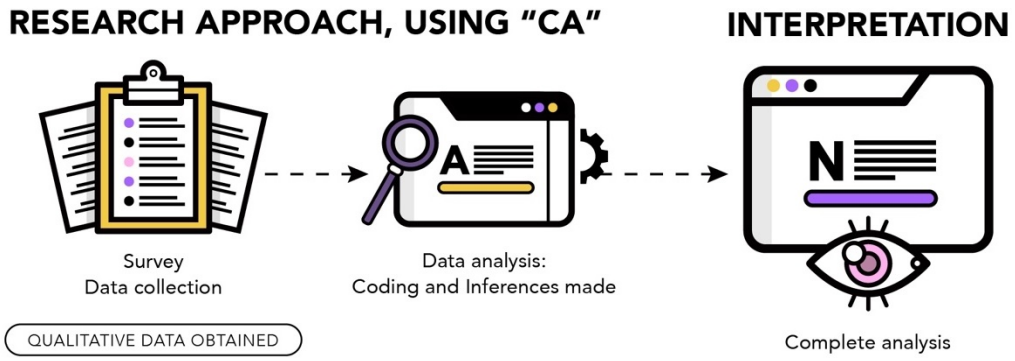


Figure 3-2: Approach to data collection (using content analysis techniques)

The above figure illustrates the steps taken in terms of data collection and analysis of the collected qualitative data. Comprehensive analysis and interpretation of the data sets are presented after the collection of the qualitative data via online surveys in Chapter IV. These data sets are not only gathered but examined in detail for later interpretation by the researcher.

The advantages of using content analysis for social studies are listed below (The Writing Studio, 2019a). This technique:

- Looks candidly at communication via texts or transcripts and gets at the central aspect of social interaction;
- Can allow for both quantitative and qualitative operations;

- Provides valuable historical and/or cultural insights over time through analysis of texts;
- Allows an intimacy with text which can alternate between specific categories and relationships and also statistically analyses the coded form of the text;
- Can be used to interpret texts for purposes such as the development of expert systems (since knowledge and rules can both be coded in terms of explicit statements about the relationships among concepts);
- Is an unobtrusive means of analysing interactions; and
- Provides insight into complex models of human thought and language use.

3.6 Research strategy

As this study seeks to *explore* the communication between SGI-SA stakeholders, *describe* the ensuing situation and events, and *explain* why it is the way it is and why it matters, the social research reported in this dissertation could follow many routes (Babbie, 2013:90-111). Ultimately, basic communication research was identified as the best framework for work to be done in this instance. A case study of a specific context was undertaken, and surveys were disseminated to study stakeholder perceptions within this milieu.

3.7 Data collection methods

Halfpenny and Procter (2015:1-5) highlight how technological advances in infrastructure and computing power have propelled the field of e-Social Science forward with new and improved services, tools, and digital data analysis techniques for social science researchers. The data collection methods detailed in this chapter form part of this movement, as the surveys are disseminated digitally to a small set of geographically displaced participants using remote communication software called *QuestionPro*.

3.7.1 Research concepts and constructs

As the research strategy intends to make use of indirect observation in which participants provide answers via a survey, the researcher needs to define the concepts they are studying and seek to measure. The allocation of numbers or symbols to a certain phenomenon is known as measurement (Volchok, 2015). Concepts, generally speaking, are abstract ideas which can be based on our experiences or real phenomena (Volchok, 2015). These could include typical demographic measures such as age or level of education attained. For this study, the following concepts related to demography are measured:

a. Name
b. Surname

c. Age
d. Ethnicity
e. Gender
f. Highest qualification
g. Employment period

Constructs differ from concepts in that they are measured with various variables (Volchok, 2015). These elements of research are typically abstract ideas which we cannot directly observe (see Table 3-1), because they are formulated for a particular research purpose in order to relate to the overarching context (KKHSOU, 2011).

Table 3-1: Research questions, concepts, constructs and variables

Related research question(s)	Concepts	Constructs	Variables
What does communication at SGI-SA entail?	Stakeholder identification and categorisation	Stakeholder position, Time investment, Importance of issues, Sensitivity of stakeholder information	Demographic profile, Characterisation of SGI-SA, Name/Surname, Gender, Ethnicity, Occupation, Employment period
How do stakeholders perceive the nature of communication: stakes, opportunities, challenges and responsibilities at SGI-SA? & What are the perceptions of stakeholders regarding the efficiency of their communication at SGI-SA?	Stakeholder relations and communication	Attitudes toward communication practice, Intention to communicate, Importance of communicative factors, Experience satisfaction, Reporting lines, Project member, Team makeup, Management	Reliability, Clarity, Timeliness, Accuracy, Frequency, Channels, Impact
In what ways can stakeholder diagnostic tools benefit stakeholders in determining the nature	Stakeholder attributes	Power, Impact, Interest, Influence, Importance of concerns,	Role, positions, activities and specialisations

Related research question(s)	Concepts	Constructs	Variables
of their communication in relation to their power, urgency and legitimacy at SGI-SA?		Legitimacy, Urgency	

3.7.2 Online surveys

Surveys administered via the internet are effective in targeting and accessing defined groups in real time who may traditionally be difficult to reach (Remillard *et al.*, 2014:696). To Du Plooy (2009:181), surveys can be considered a self-report measurement, which is a data collection technique that permits subjects to record their own responses in their own time. The online surveys used in the study followed a quasi-stakeholder management approach to answer the research questions; and can be broken down as follows:

Section 1: Identifying stakeholder groups

- The first thematic area of the survey sought to ascertain a characterisation of SGI-SA as an organisation/institution by participants. In this section participants indicated: demographic information such as gender and ethnic grouping; which stakeholder position they held at SGI-SA; the time period they spent at SGI-SA; which activities they were involved in; and their expected operational outcomes. This was done to situate the participants into their respective stakeholder classes/groups in terms of their influence on organisational operations as they were during their working period at SGI-SA. Due to the complex set of overlapping stakeholdings at SGI-SA, well-defined criteria, as defined by Roeder (2013) were used for the identification; and ranking were particularly significant to this study.

Section 2: Describing the stakes of SGI-SA stakeholders

- The second thematic area was concerned with what SGI-SA was trying to accomplish as their organisational business needs and goals. To do this, the researcher intended to pinpoint the stakes of the various stakeholders as regards their interests in the performance and overall success of the serious game development unit. This pursuit involved clarifying the claims these stakeholders had on the organisation and whether their varying interests were ever at odds with one another.

Section 3: Considering claim significance and evaluating opportunities

- The survey then saw participants assess themselves according to their perceived 'legitimacy' (presumed/legal/moral claim), 'power' (decision-making power), and 'urgency' (time sensitivity of issues); this was done in order to develop a prioritisation strategy and to answer the question whether the employment of diagnostic tools—such as the salience model developed by Mitchell *et al.*, 1997—allows us to learn more about the nature of communication at SGI-SA. Moreover, participants were probed regarding their opportunities to advance organisational goals and the challenges they were expected to overcome to better understand what they brought to the table in a variety of situations. This lends the perception they have of their own salience a degree of weight and clarifies any unclear observations made by participants. Themes identified here informed a selection of questions included as part of later questions related to the positions, activities and specialisations held/employed by serious game stakeholders at SGI-SA.

Section 4: Delving deeper into stakeholder relations, management and communication

- This examination endeavoured to discover more about stakeholder relations at SGI-SA by inspecting participant attitudes toward positions, activities and specialisations; communication practice; communicative intent; reporting lines; experience satisfaction; team makeup; and managerial functions. Stakeholder communication is also considered, asking participants about factors such as reliability, clarity, timeliness, accuracy, frequency, channels and impact. This is the final step to formulate strategies and courses of action for future serious games units at HE institutions to manage their communication effectively and possibly enhance these relationships.

The strengths of computer-administered, online surveys include the following (Du Plooy, 2009:190):

- This research method has a high response, completion and return rate;
- The data collection and entry by participants is automated and simplified;
- Participants can take their time when responding; and
- Comparatively, costs are affordable and cost-efficient.

The weaknesses of computer-administered, online surveys include the following (Du Plooy, 2009:190):

- Participants require an internet connection and a technological device on which to record their responses;
- Follow-up questions cannot be asked this way; and
- It may be difficult to draw a representative sample, as a small number of people may not accurately reflect the members of an entire population.

Lastly, the researcher followed the ensuing guidelines for designing effective surveys, as posed by McLafferty (2003:93):

- The survey remains simple by avoiding lengthy, complex questions;
- Terms are defined clearly and biased or emotionally charged terms are avoided; and
- The simplest possible wording is used, and negative words like 'not' or 'none' are avoided.

In summation, the surveys collected concise, personal answers from participants in order to gauge their stakeholder status according to four functional categories identified in Chapter II, including: *development* (game development activities), *publishing* (game marketing and advertising activities), *supplemental* (ancillary, general activities needed for game creation) and *context-bound* (niche, serious game-related activities). These questions allow for deep insight into the thoughts, feelings and perceptions of participants regarding their own stakeholder experience at SGI-SA.

3.8 Reliability

Golafshani (2003:597) acknowledges that research concepts such as reliability need to mirror the various ways of discovering truth in scientific inquiry. Research reliability describes the degree to which a research method can produce constant and repeatable results if applied to the same object/subject numerous times. Consequently, the number of cases coded the same way are added together and divided by the number of cases, guaranteeing stability or the same results again and again (Stemler, 2001:139). Reliability is also safeguarded by making contact with all of the core stakeholders of SGI-SA, making it unlikely that repeating the study will lead to different results by having a change in the participants.

3.9 Validity

It is argued by Golafshani (2003:599) that qualitative researchers should focus on *precision* (accuracy of research instruments), *credibility* (legitimate judgments) and *transferability* (evidence-based applicability to other contexts/scenarios). The following subsections outline how these principles are upheld in this study:

3.9.1 Precision

According to Noble and Smith (2015:34), precision in qualitative research is the extent to which the findings of academic research "accurately reflect" the gathered data. Qualitative researchers therefore intend to develop and implement methodological strategies to ensure precision of their findings. Furthermore, precision is guaranteed by: (a) accounting for personal biases in sampling procedures, interpreting findings and critical reflection on inferences; (b) thorough record keeping and transparent presentation of interpretations; (c) ensuring that different perspectives are represented; (d) including verbatim participant accounts to support findings; and (e) demonstrating precision in thought processes present in data analysis and ensuing interpretations (Noble & Smith, 2015:35).

3.9.2 Credibility

The researcher makes use of *source triangulation* (comparing perspectives of various stakeholders at different times) to ensure consistency and credibility of the data gathered.

3.9.3 Transferability

The researcher ensures transferability of the research by applying the following principles of sound qualitative research to the study (Burchett H. E. D. *et al.*, 2012:424):

- Construct the scene and clearly delineate the context around the study;
- Provide rich accounts of participant expressions during data collection;
- Identify implicit partiality, preference or prejudice in participant responses;
- Frame expressions from participants into social/cultural environments; and
- Outside researchers make transferability judgments on their own.

3.10 Research participants

A total of nineteen (n=19) purposeful participants were invited to take part in the study as depicted in Figure 3-3. The divisions between the chosen samples are depicted here to delineate the core team from the other stakeholders involved with game production at SGI-SA.

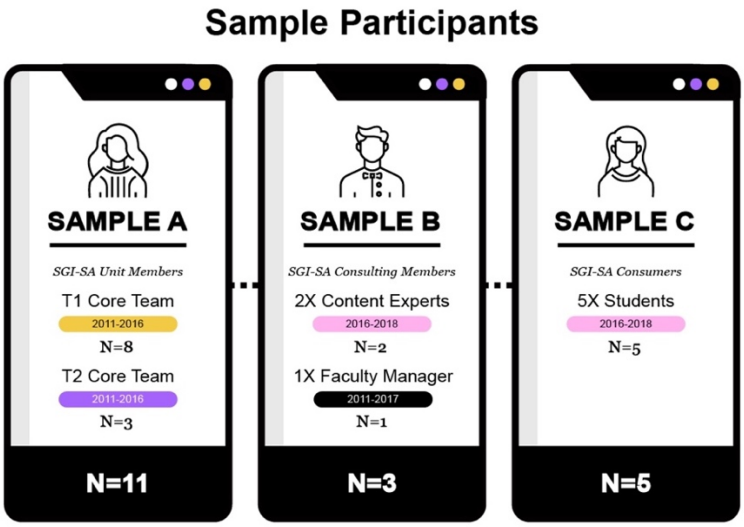


Figure 3-3: Overview of the theoretical sample groups for the study

**Note: No data collection procedures were separated by sample group and all sampled participants received the same implementation of the data collection method.*

Many of the sampled participants held unique positions and had distinct responsibilities from each other from 2011 to 2018. However, there was some overlap between roles at SGI-SA, making it critical to record the perspectives of each of the stakeholders in the same way. This is done to ensure that all possible stakeholder duties, concerns and tasks are covered when classifying these individuals in relation to their work at SGI-SA. It also guarantees that the research correctly estimates the parameters of the population and represents the larger population of serious game developers.

Sample A: SGI-SA unit core members

The initial team (T1) at SGI-SA (2011-2016) was made up of eight (n=8) people, including: project manager(s)/producer(s); programmer(s); artist(s); marketer(s); designer(s); and tester(s). Oftentimes these roles overlapped; for example, game designers were often expected to be the testers of the serious games being produced. This team (T1) became smaller over time and was made up of only four people by the time the second team (T2) was formed (2017-2018). These are regarded as two distinct groups for this study as Sample A. As stated in Chapter I of this dissertation, the researcher was part of T2, reducing this group to three possible stakeholders (n=3). All eleven (n=11) of these core SGI-SA participants were at one time situated in Vanderbijlpark in the Gauteng province of South Africa, but several have moved to other jobs and/or relocated from Vanderbijlpark since then. For this reason, the

researcher has chosen online surveys to disseminate to this sample to overcome this logistical constraint. Some of the members of both SGI-SA T1 and T2 are still a part of the NWU, Vanderbijlpark campus, making it easier to access certain members of this sample.

Sample B: Consulting SGI-SA members

Two content experts (n=2)—academic consultants regarding the educational essence of a serious game—are a part of this sample grouping. A single NWU faculty member (n=1) served as the institutional project manager behind SGI-SA and are tallied as part of the drawn sample as well.

Sample C: SGI-SA Consumers

Lastly, five NWU students (n=5) round off the stakeholders involved in the study. To exclude these stakeholders would be senseless and may skew the results. A total of 19 stakeholders (n=19) are therefore included.

3.11 Data analysis

Coding and inference are concepts at the heart of content analysis. Remenyi (2014:18) maintains that a researcher may add, remove or combine grouped data to convey a "higher level of meaning" through (a) the creation of codes, (b) the ensuing management and (c) analysis thereof. Moreover, a code comes in many shapes and sizes, i.e. words, sentences, phrases or acronyms of concepts under investigation. Such levels of abstraction are subjective in nature and may vary from researcher to researcher; yet they provide representations of patterns, ideas or themes by grouping them into concepts, categories or constructs, respectively (Remenyi, 2014:17-19). These codes ultimately have a direct influence on the outcomes and results of the research in question.

Content analysis, as described above, is but the first step in understanding gathered data, as codes should be sorted, summarised and reflected upon periodically or after a given data collection session (Remenyi, 2014:153).

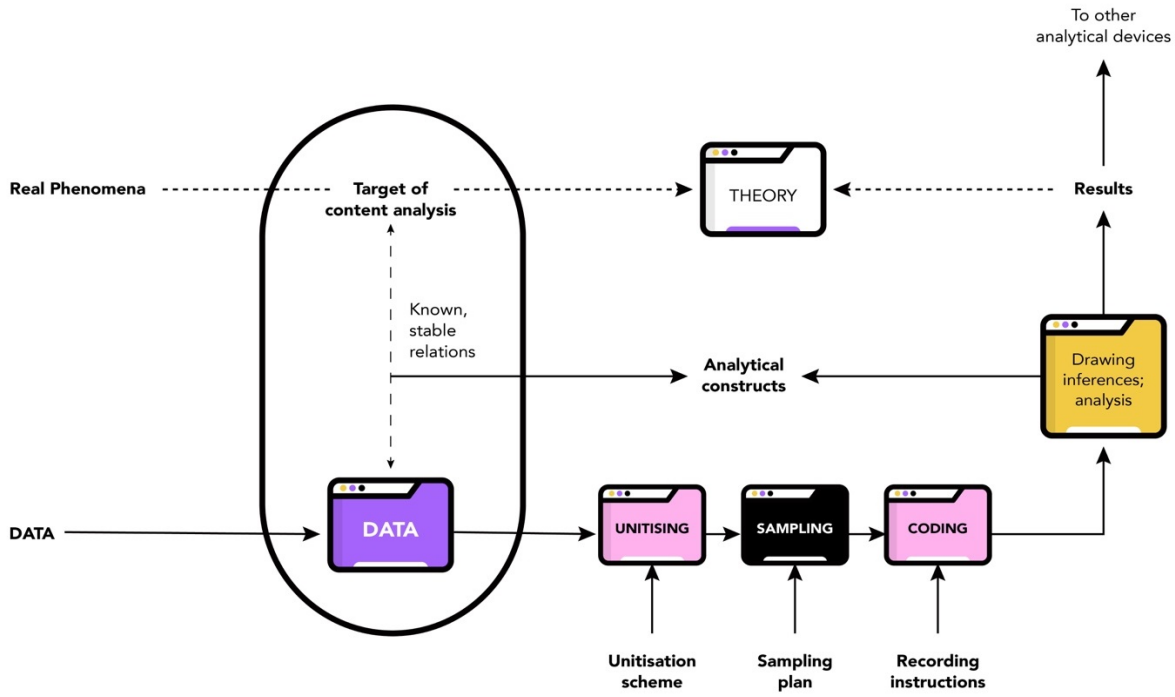


Figure 3-4: The content analysis model followed for this research (Krippendorff, 1989:406)

Krippendorff (1989:406) states that there are six steps that define content analysis as a research method. These steps (Figure 3-4) squarely situate the underlying techniques within the realm of social studies:

(a) Design: A conceptual phase where the context for study is defined (e.g. SGI-SA at NWU, Vanderbijlpark); what the researcher(s) wishes to know is identified (e.g. stakeholder perceptions); all sources of relevant data are explored (see Chapter II); and where available knowledge is formalised regarding the data-context relationship. Generally speaking, this phase involves clearly delineating the empirical work to be done in a research project.

(b) Unitising: A stage where units of analysis (i.e. sample and their survey responses) are identified. Recording units (i.e. themes, propositions and assertions) are also considered here, and are viewed as having independent meanings from each other.

(c) Sampling: Unravelling statistical bias to ensure a representative sample is drawn for the symbolic phenomena under investigation.

(d) Coding: Describing units or classifying them along categories of chosen analytical constructs.

(e) Drawing inferences: Explaining how identified variables of coded data are related to the phenomena under investigation. This is viewed as the most significant step in any content analysis study.
(f) Validation: Authentication of evidence during content analysis is difficult, as the techniques are often applied to scenarios where the subjects under study are intangible (e.g. organisational culture) and cannot directly be observed (e.g. stakeholder relations).

3.12 Ethical considerations

To Du Plooy (2009:244), communication research primarily concerns itself with issues of privacy, professional/institutional control, and confidentiality. Likewise, Du Plooy (2009:244) offers that researchers should uphold integrity when collecting and analysing data, based on two imperative principles: (a) utilise suitable research designs to reach objectives and answer research questions; and (b) refrain from implying weight to matters that the data does not warrant. The first relates to accuracy and appropriateness of the chosen research design(s) to precisely and reliably collect data, and the second describes the correct steps to guarantee that the validity and reliability measures are followed before, during and after the empirical research phase.

Sufficient detail was given to all participants regarding the nature of the research in question as well as the procedures involved. This information was plainly written in the introduction section of the surveys. Research objectives were clearly stated and the potential risks and benefits of the conducting of this research were made evident from the start of the empirical phase (to the printing of this dissertation). The following research details were included in the survey information sheet:

- Who the researcher is and their contact details;
- The research aims and objectives;
- What the research entails, including: how participants are identified and approached; what participation involves in the survey; and all risks are made known;
- Participants are reassured that their participation does not have an impact on their current work environments or circumstances;
- Various data concerns, such as how the data is managed once collected via survey; which and whether findings are reported to participants in the form of a summarised copy; ways in which the information collected is securely stored; and how long it is kept for;
- Confidentiality of participants is assured by way of anonymity; and

- General statements regarding the archiving of the research to be made accessible for future research.

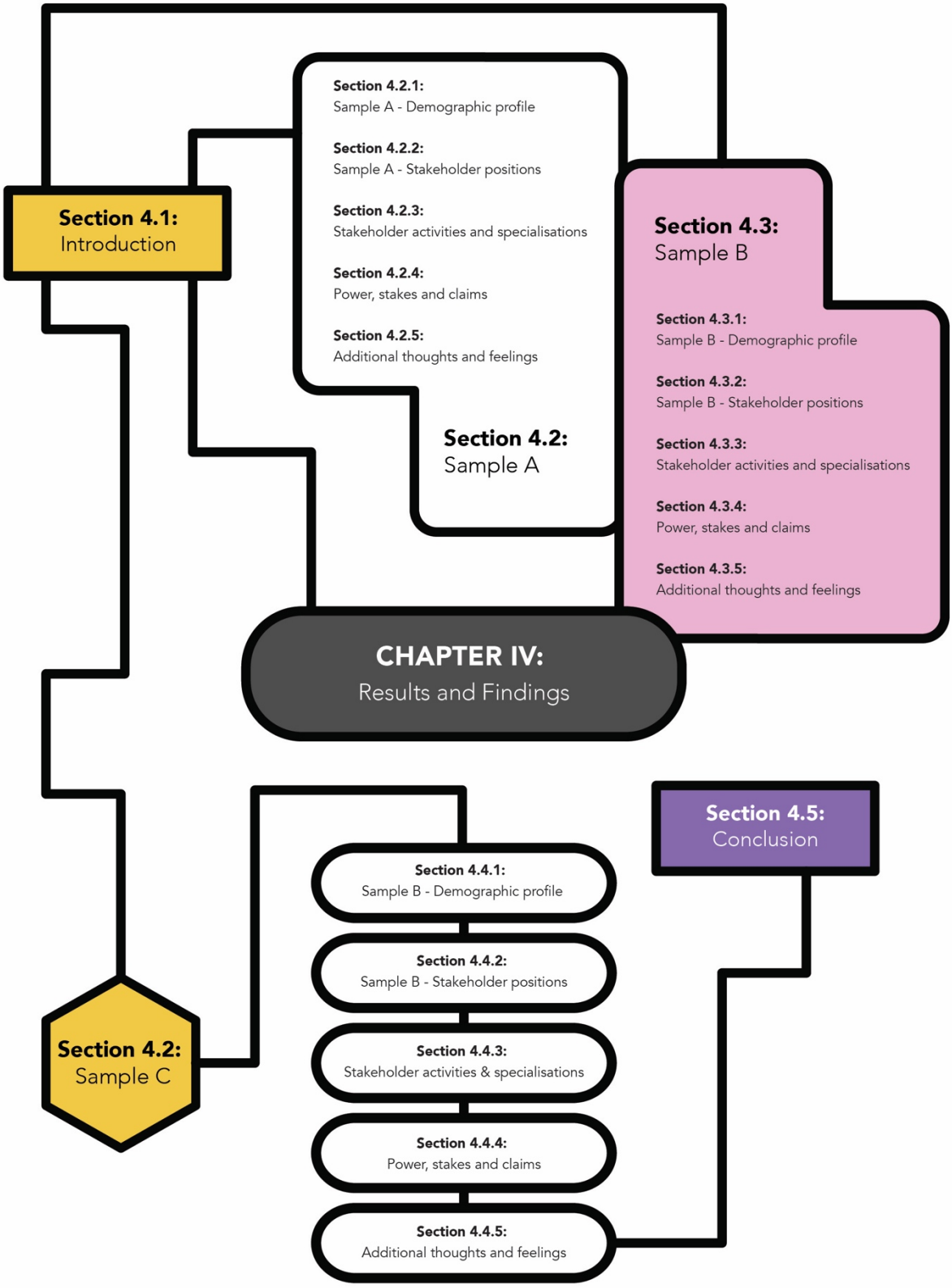
The privacy of participants is protected by allowing them to provide their information if they so choose. Participants therefore have no obligation to provide or reveal sensitive data that they or someone they know may have to live with on a daily basis. This information is only used for its intended purpose and is not shared with any other organisations. Finally, none of the collected data are manipulated or altered in order to accurately represent the attitudes, thoughts and opinions of the sampled participants.

This nature of the research as fully voluntary is communicated to participants at the beginning of the online survey and is emphasised and demonstrated at the onset of the empirical work. Moreover, prospective participants are freely given the chance to give consent and withdraw at any stage of the research.

3.13 Conclusion

Chapter III has situated the study within a framework capable of guiding proceedings and explaining the philosophical assumptions of and empirical approach to the research. A research philosophy refers to a system of beliefs and assumptions about developing knowledge in a particular field of study (Saunders *et al.*, 2009:124). This case study employs an interpretivist philosophy, as the researcher recognises that there are different ways of interpreting the world and approaches to research (James, 1975:4). The ontology employed views reality as being either objective, subjective or in this case: both. Moreover, an inductive approach is utilised with the intention of: (i) explaining causal relationships between concepts and variables (stakeholders and communication); and (ii) deducting conclusions from premises or propositions (the nature of communication at SGI-SA is insufficiently studied). The resulting research strategy seeks to gather qualitative (mono-method) data by way of surveys disseminated to SGI-SA stakeholders in the identified serious games design context at NWU Vanderbijlpark campus. This case study research is intended to be versatile and adaptive in its approach by focusing on a single context to make replicable and valid inferences from data (content analysis) and testing/validation thereof (interpretivism). Statistical analysis, open coding and interpretive analysis are used as analysis techniques for the responses received from the stakeholders themselves.

Chapter IV covers the results obtained from the data and presents the interpreted findings.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CHAPTER IV: RESULTS AND FINDINGS

4.1 Introduction

No previous studies have been conducted on the perceptions of stakeholders regarding their own experiences of SG positions, activities and specialisations. The following chapter presents the results of the online surveys and reports on the findings to learn more about this stakeholder set. Survey responses by the participants are offered and explained according to sample groups discussed in Chapter III. Sample A is made up of core SGI-SA interest unit stakeholders who presumably held development, publishing and supplementary positions and performed activities relating to these functional categories. Sample B is made up of majority context-related stakeholders who took up positions as content experts and researchers with SGI-SA at some point in time. Finally, Sample C is comprised of publishing and supplemental stakeholders, such as students at NWU and players of SGI-SA serious games media.

What does this chapter add?

- This chapter describes the analysis of the collected survey data and includes a discussion of the research findings;
- The findings relate to the research questions that guide the study;
- Data were analysed to identify, describe and explore the relationships between SGI-SA stakeholders and their communication practice as it relates to their positions, activities and specialisations; and
- The survey responses are presented, discussed and supported by sample grouping. Sample A, B and then C are organised in this way.

4.2 Survey responses: Sample A

Sample A included both the initial team (T1, 2011-2016) and secondary team (T2, 2017-2018) members of SGI-SA. Ten (N=10) participants completed the survey; which is one less than the expected eleven proposed in Chapter III of this dissertation. The reason for this is that one of the core team members continued their duties for SGI-SA from T1 to T2. It was not expected for this individual to complete two surveys, as one covering the duration of time spent at the

interest unit would suffice for this study. This is important to note, as the sample grouping was adjusted during data collection to accommodate this primarily “development” respondent.

4.2.1 Section 1: Sample A - Demographic profile

Figure 4-1: Sample A - Age

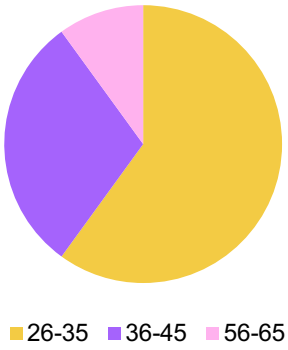
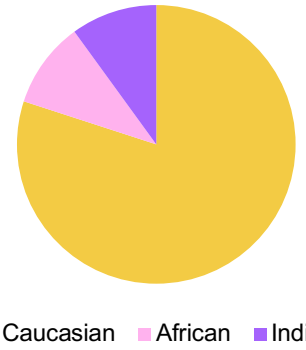


Figure 4-2: Sample A - Ethnicity



The ages of the ten (N=10) participants in Sample A were relatively uniform. Six (N=6) of the participants identified themselves within the 26-35 age range. The other four (N=4) participants fell within the 36-45 (N=3) and 56-65 (N=1) age ranges, respectively. This age trend continues when considering the ethnicities of participants, as eighty percent (N=8) of Sample A were “Caucasian”. One (N=1) respondent indicated they were “Indian” and the final respondent (N=1) was “African”. Subsequently, age and ethnicity for Sample A can be described as relatively uniform in nature. Participants in the majority were between the ages of 26 and 35 (Figure 4-1) and Caucasian (Figure 4-2).

Figure 4-3: Sample A - Gender

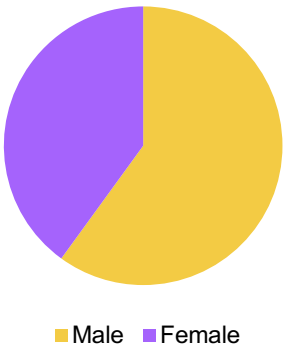
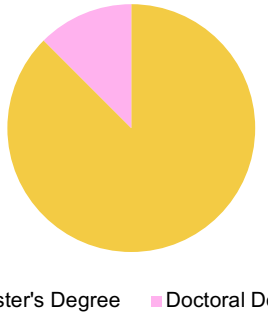


Figure 4-4: Sample A - Highest qualification



The majority (N=6) of Sample A identified themselves as “Male”, while four (N=4) identified as “Female”. Moreover, Sample A was made up of highly qualified individuals, with seven (N=7) participants having “Master’s degree(s)” in their respective fields. One respondent (N=1) indicated they had a “Doctoral degree”; another (N=1) had an “Honour’s degree; and the last

respondent (N=1) had a “Bachelor’s degree”. Sample A can therefore be described as a young, homogenous, majority male, Caucasian group with many stakeholders holding master’s degrees.

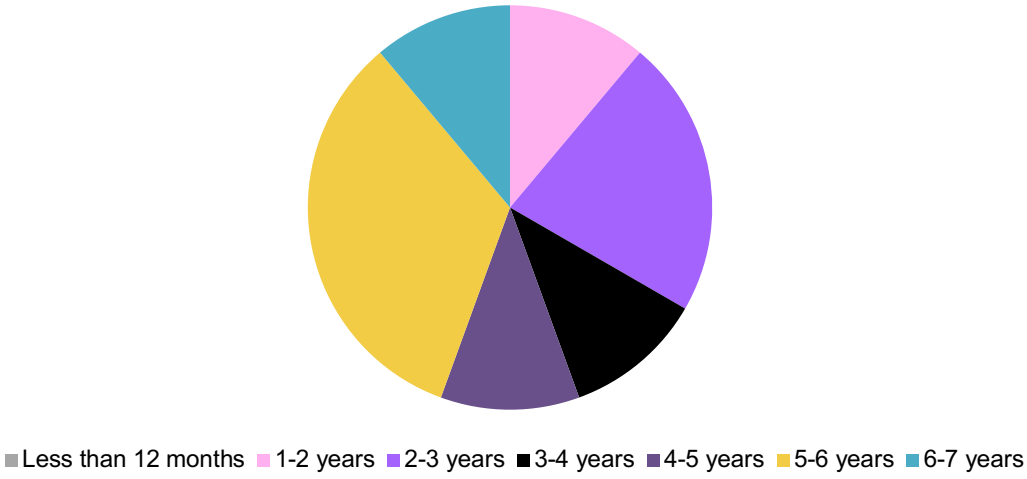


Figure 4-5: Sample A - Stakeholder involvement period

Figure 4-5 demonstrates the involvement period for Sample A participants. Overall, the working period for these stakeholders is significantly longer than transient stakeholders such as “content experts” in Sample B. Indeed, these individuals were involved with SGI-SA during various periods of time and for varying durations; yet many of the individuals in this sample spent considerably more time with the interest area to manage, design and develop serious games between 2010 and 2018. In total, these participants suggested involvement spanning from as early as January 2010 to January 2019 (9 years). The longest duration indicated by a single respondent (N=1) was six and a half years (6.5 years), and the shortest was nearly two years (1.9 years).

4.2.2 Section 2: Sample A - Stakeholder positions

Table B-1 in Annexure B may appear confounding upon first glance. However, such an assortment of stakeholder positions was expected, as it was proposed in Chapter II & III that the variety of individuals within SGI-SA were expected to fulfil a wide breadth of duties. Markedly, the majority of official job titles, descriptions and outcomes align with the various stakeholder positions selected for Section 2 of the survey itself. Administrative positions (as indicated by participants) were the only items to not appear in the survey.

Participants indicated that they predominantly held positions relating to the “development” duties below:

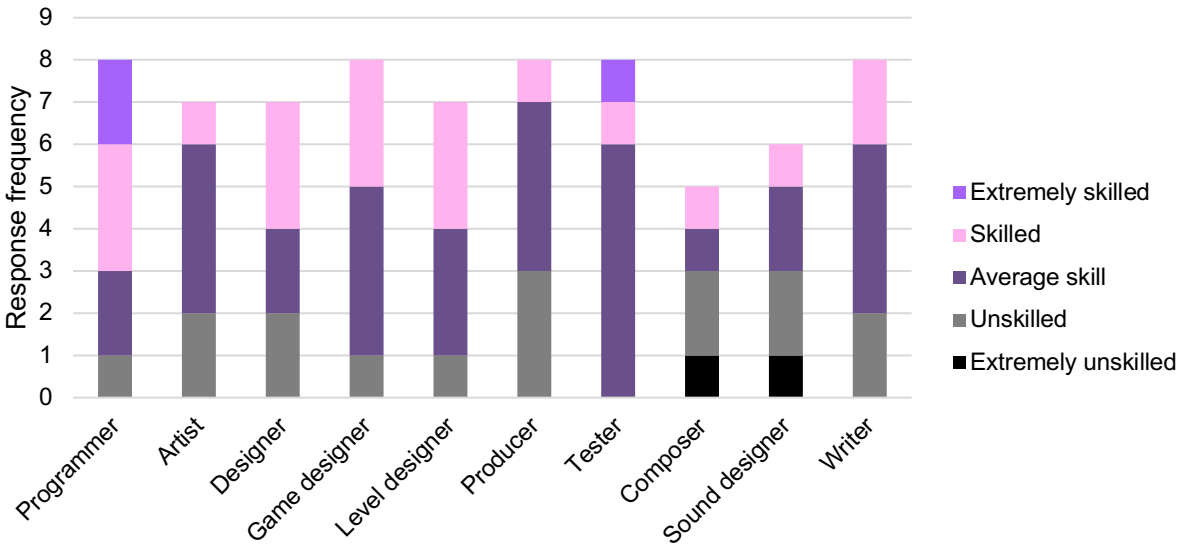


Figure 4-6: Sample A - Stakeholder development positions and perceived skill

Sample A leans into the “development” positions listed in the survey. Yet, many responses indicate that some or all of these positions/skills are non-applicable to them during their time at SGI-SA. This could be equalised by heightened skill perception in latter functional categories i.e. “publishing”, “context-related” and/or “supplementary” positions. This is an unexpected result, as many of the core members of SGI-SA fall within this sample. These individuals were expected to predominantly fulfil the positions provided in Section 2 of the survey. Generally, the bulk of responses indicate average-to-adequate skill in terms of fulfilling development duties at SGI-SA. This result aligns with certain expectation for Sample A to be involved with “development” and “publishing” undertakings at SGI-SA.

It is interesting to note that higher skill perceptions were recorded for post-2016 stakeholders, while pre-2016 participants provided higher frequencies of “Unskilled” and “Average skill” in this functional category. There is therefore a distinct contrast in perceptions between these assemblies of stakeholders regarding their development skills in relation to the position they held at SGI-SA.

Sample A participants indicated that they predominantly held positions relating to the “publishing” duties below:

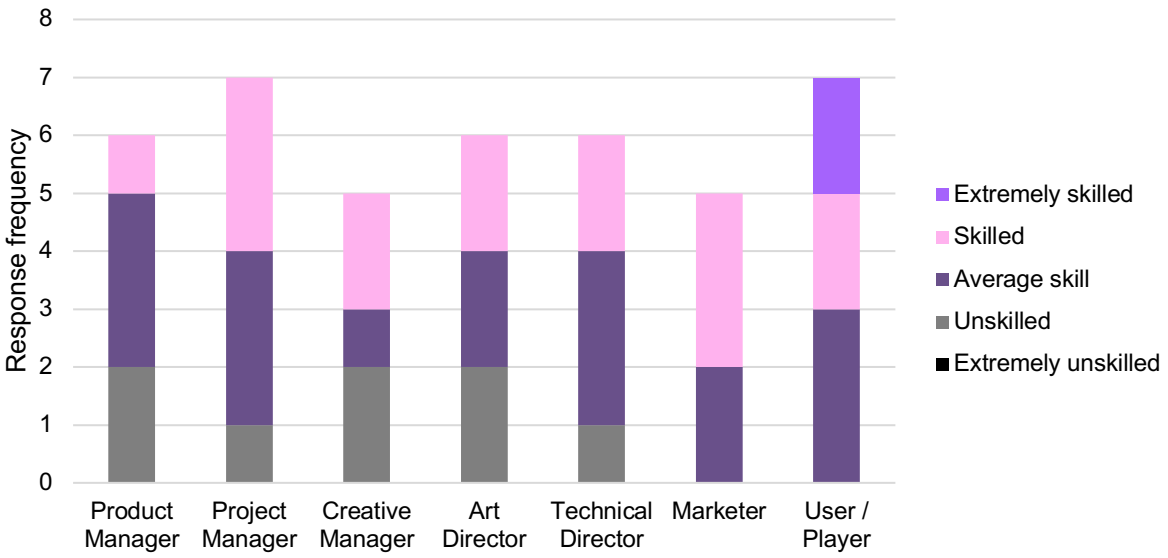


Figure 4-7: Sample A – Stakeholder publishing positions and perceived skill

According to responses for "publishing" positions at SGI-SA, a large proportion of stakeholders regarded these positions as non-applicable for SGI-SA members. These responses were most likely given by stakeholders who were not directly involved in these duties, but who may have had a role to play in them at one stage during their involvement with SGI-SA. This finding diverges from the expectation for Sample A "core team" stakeholders to predominantly hold "development" and "publishing" positions at SGI-SA.

Participants indicated that they predominantly held positions relating to the "context-related" duties below:

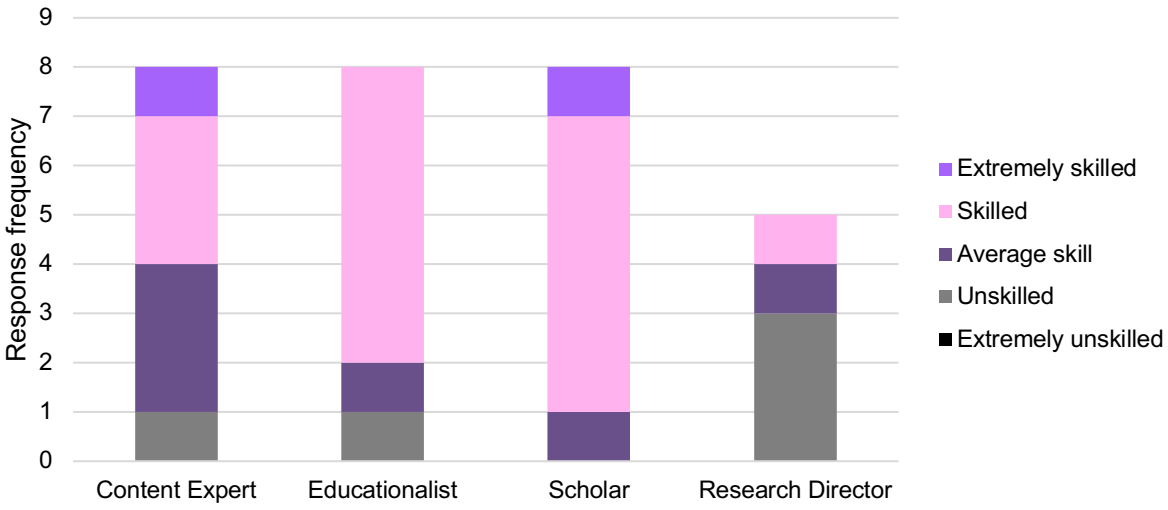


Figure 4-8: Sample A - Stakeholder context-related positions and perceived skill

Unexpectedly, the majority of responses in Sample A for "context-related" positions reveal high perceived skills in academic and scholarly endeavours. This finding is indicative of the requirement for SGI-SA stakeholders to hold academic positions at the North-West University as lecturers and researchers. A further dynamic to serious games interest areas at HEinstitutions is added when considering that stakeholders in these organisations are expected to fulfil duties in three operative spheres, namely: (a) teaching and learning, (b) research, and (c) serious game production (development, publishing, context-related roles and supplementary activities). This is by no means characteristic of every SG interest area but was certainly the case at SGI-SA.

The barriers these operative spheres present to stakeholders involved in serious game design at HE interest areas is explored later in this chapter. Suffice it to say, performance expectations from management and the broader institution did not benefit the people working at SGI-SA. This manifold focus for specialised stakeholders to execute work in disparate areas only leads to watered-down results and confounding communication systems (as well as underlying issues). Literature also confirmed (refer to Chapter III) that this is hazardous from a communication point of view, and could lead to low motivation, missed work, turnover costs and blurry or unachieved objectives.

Participants indicated that they held positions relating to "supplementary" duties below:

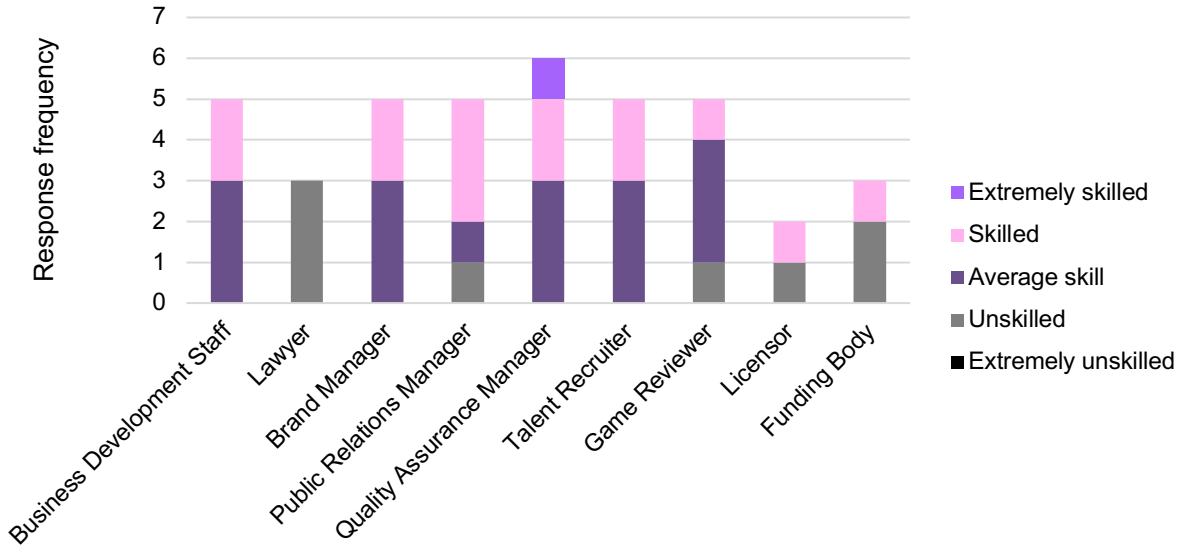


Figure 4-9: Sample A - Stakeholder supplementary positions and perceived skill

A marginal section of Sample A indicated involvement in "supplementary" positions at SGI-SA. This is to be expected, as many of the jobs listed in this Section of the survey are temporary

and/or once-off. Fortunately, these positions were attributed some modicum of skill and none were deemed wholly non-applicable to participants. Pointedly, “Lawyer” and “Licensor” received the most occurrences (N=8 each) of “N/A” responses. These positions often require highly-specialised, niche individuals to fulfil duties—so this is an anticipated result.

4.2.3 Section 3: Sample A - Stakeholder activities and specialisations

Responses in Annexure B, Table B-2 firmly place Sample A into the “development” and “publishing” functional categories for this study. The chief activity classifications that arose are as follows: (i) Management activities in the form of sourcing both local and international clientele for serious game projects; (ii) Executive roles to manage team members; (iii) Financial duties involving budgets and work resources (software, hardware, technology); (iv) Copyright, trademark and patent activities to assign property rights to products made; (v) Administrative roles to fulfil communication needs (secretarial, executive, social media); (vi) Design and development activities to plan, validate, conceptualise, create, iterate and disseminate serious games; and (vii) Consultation duties to procure content matter experts to ensure that sound academic content is included in media developed by the team. With that being said, this does not mean these stakeholders are exclusively involved with these two functional categories and not the others, i.e. “context-related” and “supplementary”.

Furthermore, the following serious games were produced during the time Sample A stakeholders were at SGI-SA: (A) *FinMan*; (B) *Oculift* (demo); (C) *Mandela27*; (D) *Univenture*; (E) *StoryTimes*; (F) *WayoAfrica*; (G) *KavosKitchen*; (H) NUTB121 study guide (demo); (I) *Survive with Vuvu in the Vaal* (demo); (J) *ExMan-3D*; (K) CSIR board game; (L) Mittal safety training (demo); (M) Interactive walkthrough of NWU campus (building 3 to 4), Vanderbijlpark campus; (N) *Thabang’s Statventure* (prototype); (O) *Gr8 Success!*; (P) *Queen & Country*;(Q) *Codebreakers*; and (R) *Enigma*. Such a large list of serious games media produced from 2011 to 2019 can be attributed to stakeholders in Sample A, as these individuals worked at the interest area for longer periods of time when compared to other stakeholders and therefore worked in a more permanent capacity (when juxtaposed with other serious game stakeholders). Results obtained indicate that participants had a level of familiarity with their responsibilities across time, activity and capacity dimensions. This is a positive finding, as it demonstrates that the people working with core development and publishing activities at SGI-SA understood their roles as stakeholders within a niche serious games interest area.

A number of responses reinforce this development finding, as one participant said: “[I] worked with tools such as *UDK (Unreal Development Kit)*, *Unity*, *Blender*, *Photoshop* and technology such as the Xsens motion capture suit to create serious games.” Such a statement recognises

the complex tools needed to develop digital SG media. “[I was] a C# programmer and full member of the game development team”, said another participant.

In support of the activity classifications and the proficiency of these development stakeholders in performing duties at SGI-SA, a participant detailed that:

> I worked as part of a team on the design, development and testing of [serious game name], which resulted in three research outputs. I also acted as one of the content experts for [serious game name]. Because we were a relatively small team at SGI-SA, I also had to perform other duties, such as communicating with clients, working on graphics and sound editing.

Figure 4-10 corroborates the familiarity of SGI-SA stakeholders with development activities qualified by the researcher:

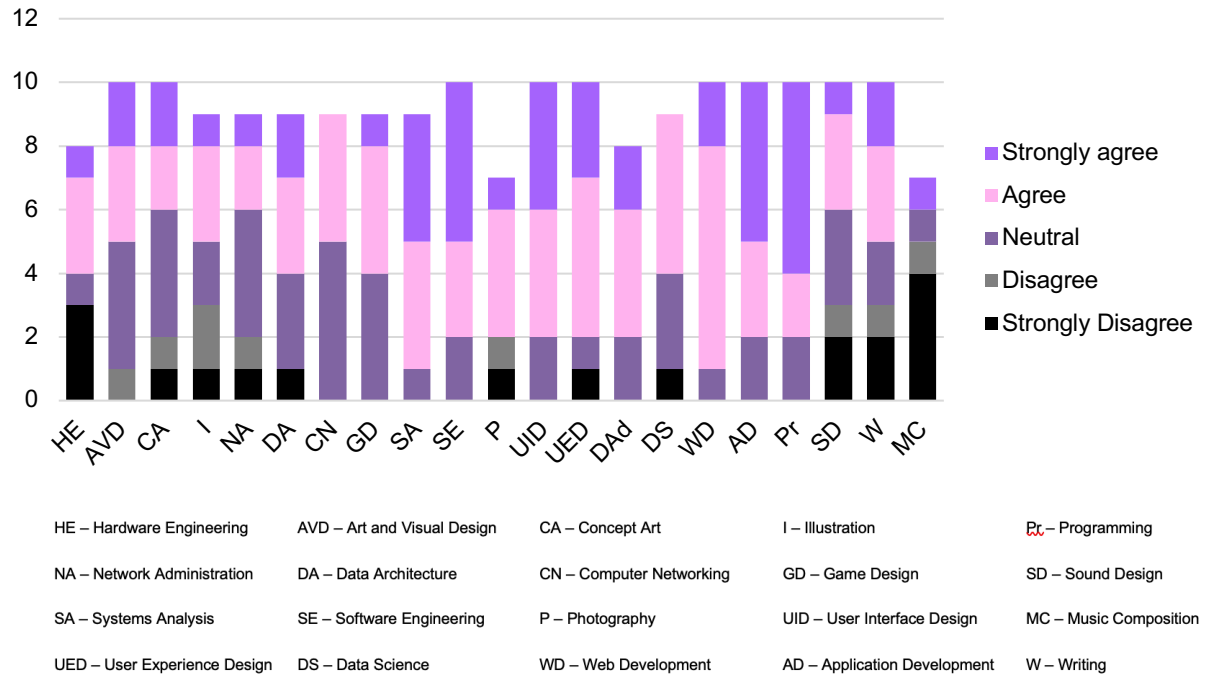
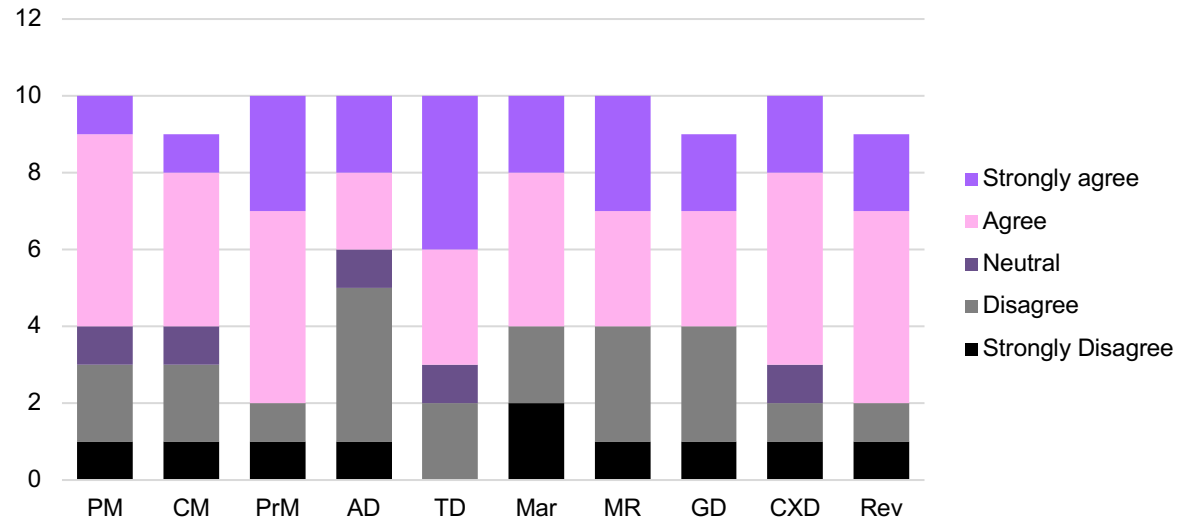


Figure 4-10: Sample A - Development activities

As anticipated, Sample A participants were familiar with activities relating to the conceptualisation, design, development, testing and release of digital and analog serious game media. The majority of responses range from “Neutral” to “Strongly agree”—signifying a strong link between the target sample and the tasks, duties and undertakings needed to effectively create and distribute games which do more than purely entertain. “Software Engineering” (N=5), “Application Development” (N=5) and “Programming” (N=6) received the

majority of “Strongly Agree” reactions from participants, supporting this result. Otherwise, most responses fall within either the “Neutral” or “Agree” categories for these “development” activities.



PM – Product Management
CM – Creative Management
PrM – Project Management
AD – Art Direction
TD – Technical Direction
Mar – Marketing
MR – Market Research
GD – Graphic Design
CXD – Customer Experience Design
Rev – Reviewer

Figure 4-11: Sample A - Publishing activities

Many participants designated familiarity with publishing activities in Sample A. “Art Direction”, alternatively, appeared to garner the most negative response from participants.

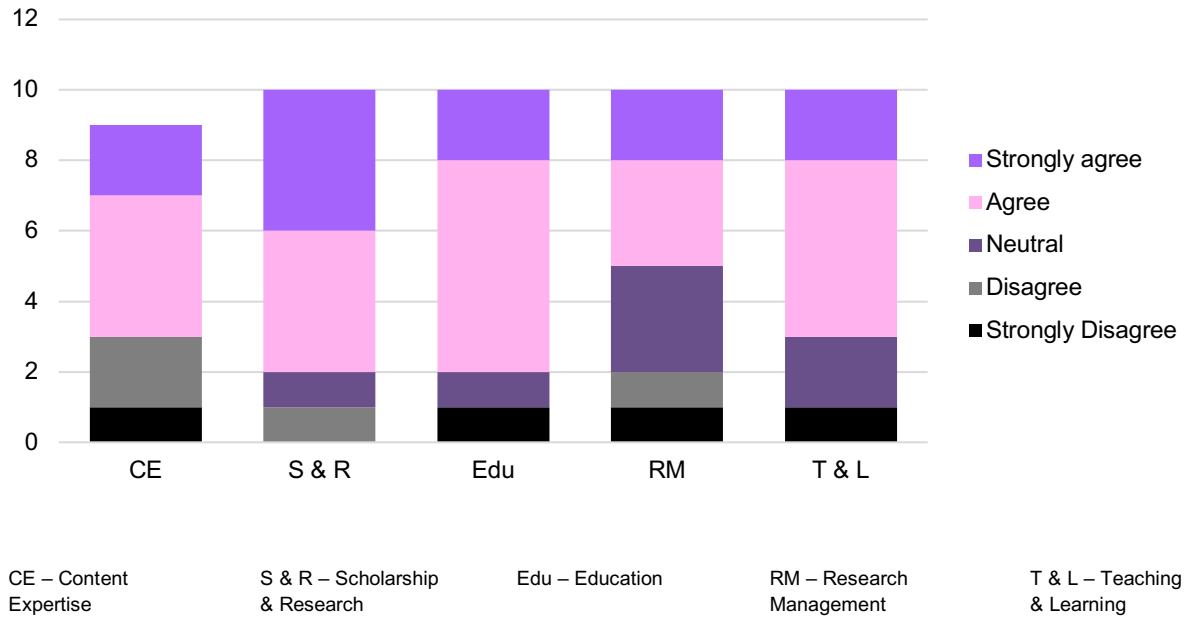


Figure 4-12: Sample A – Context-related activities

Interestingly, the predominantly "development"-focused participants also indicated strong familiarity with academic and scholarly activities. The comprehensive focus of these individuals is yet again brought to the fore with this result. Not only were the stakeholders at SGI-SA expected to develop serious games and perform publishing activities to ensure their release and marketing, but also to undertake teaching and learning activities at the HE institution—NWU. Such convoluted work expectations would likely put strain on these individuals to meet their personal and professional goals in all functional categories. As positive as the finding is that the stakeholders at SGI-SA were multi-focused and capable individuals with an assortment of foci, the results now verify the postulations of the researcher that people at serious games interest areas are required to perform a blend of activities.

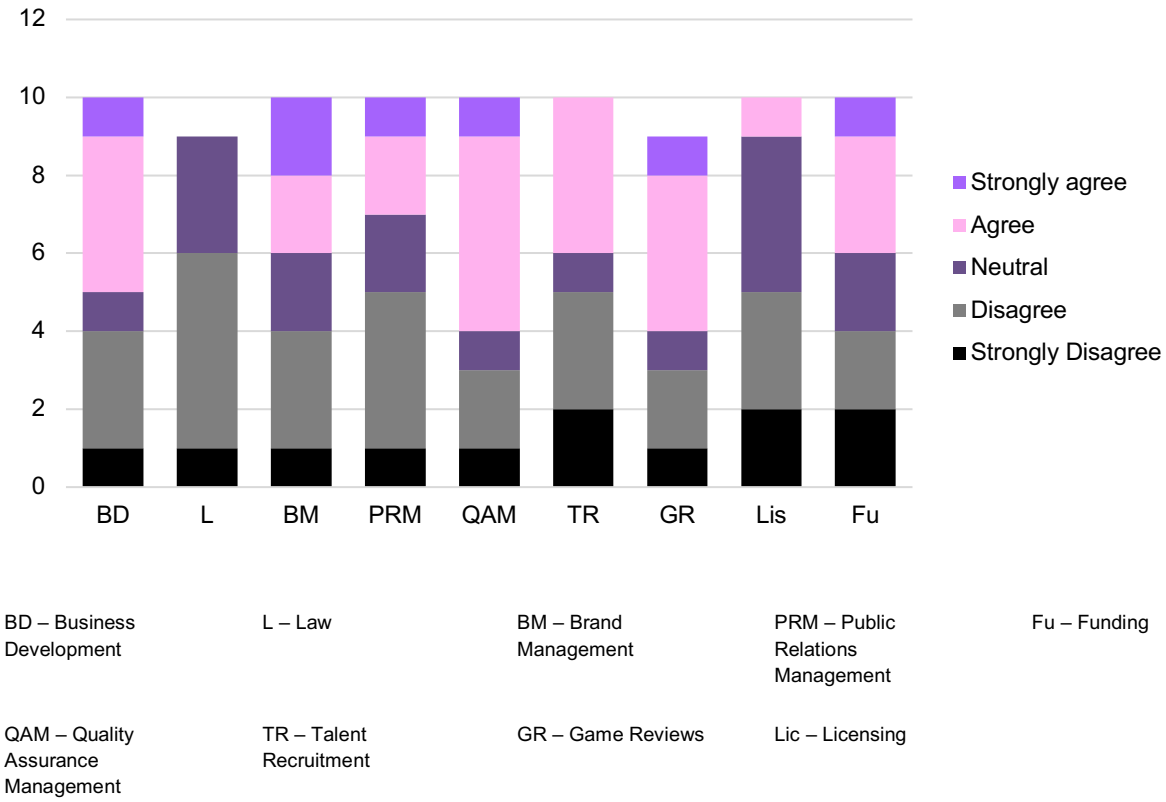


Figure 4-13: Sample A - Supplementary activities

A more neutral reaction is noted for "supplementary" activities at SGI-SA for Sample A. The spread across both "Disagree" and "Agree" responses for these activities even out this anticipated result. A middle-of-the-road response was anticipated by the researcher, as many of the undertakings require specialisation to complete. A smaller portion of stakeholders, therefore, would be expected to deliver outputs in this functional category.

Table B-3 (Annexure B) shows a mixed, albeit positive picture of resource distribution at SGI-SA. The bulk of responses express satisfaction with the physical assets (e.g. computers), equipment (e.g. monitors), information technology (e.g. telephones, servers) and communication systems (e.g. teleconferencing systems) made available to team members.

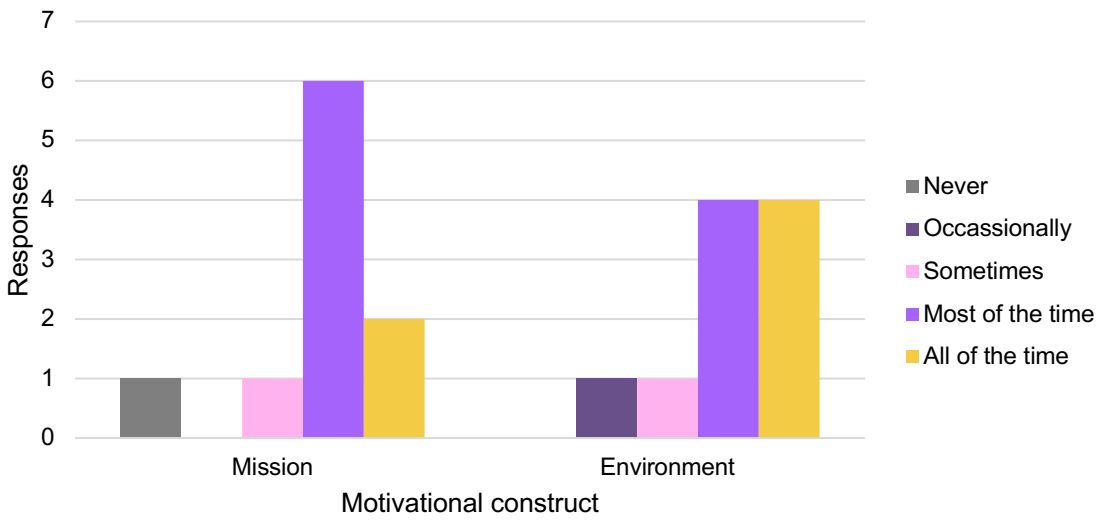


Figure 4-14: Sample A - Motivation according to Mission and Environment

The majority of participants felt fairly motivated by both the (a) mission and (b) environment of SGI-SA. This is an encouraging result, as 80% (N=4 and N=4) of responses show stakeholders at SGI-SA felt the goals, aims and circumstances of the institute stimulated them to perform well.

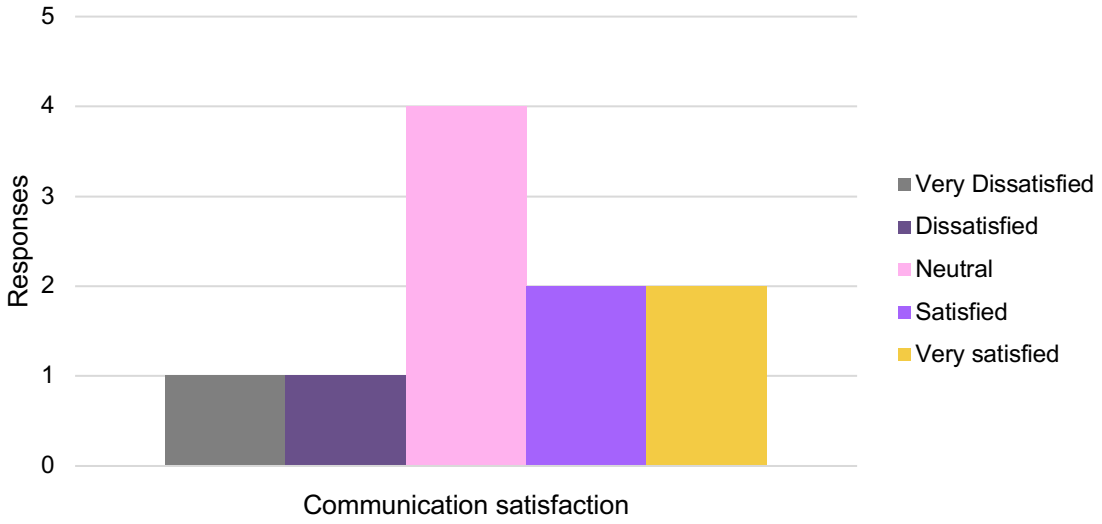


Figure 4-15: Sample A - Communication satisfaction

Disturbingly, the majority (N=4) of participants remained “neutral” in terms of communication satisfaction at SGI-SA. Ideally, any organisation would want all stakeholders to be “satisfied”

or “very satisfied” with information exchange via writing, speaking or other mediums of interchange.

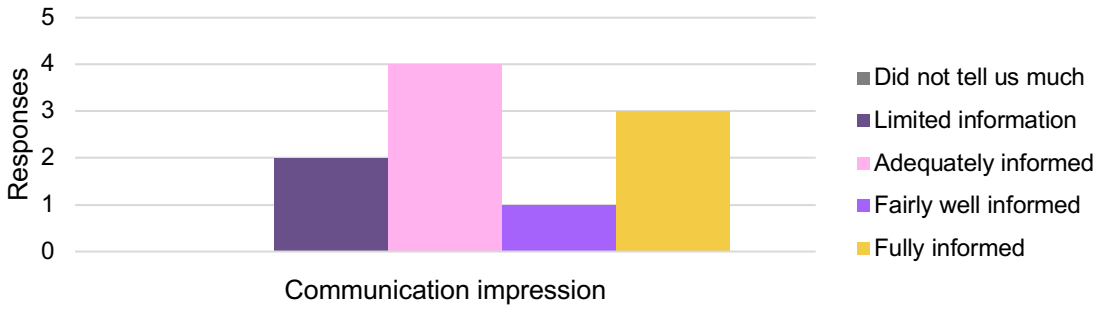


Figure 4-16: Sample A - Communication impression

The negative perceptions continue with the impression participants had with communicative practice at SGI-SA. The popular opinion (N=4) among participants was that they were only “adequately informed” about goings-on at the interest area. Only 30% (N=3) felt they were “fully informed” regarding information transmission, disclosure and dissemination. This is also starkly contrasted by the two (N=2) individuals who experienced receiving “limited information” from others at the institute.

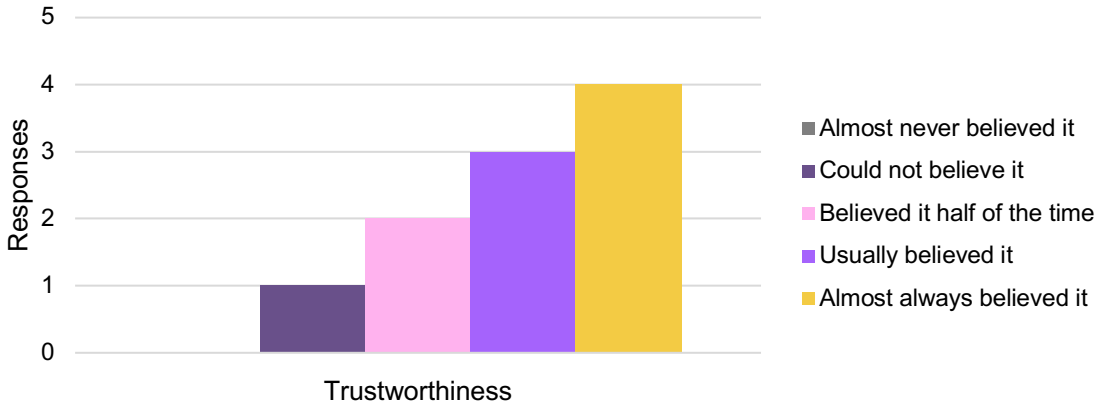


Figure 4-17: Sample A – Information trustworthiness

Fortunately for SGI-SA stakeholders, the popular opinion of participants was to “usually” or “almost always” believe information circulated at the interest area. This means that facts, details, particulars and intelligence at SGI-SA could be relied upon as honest and truthful.

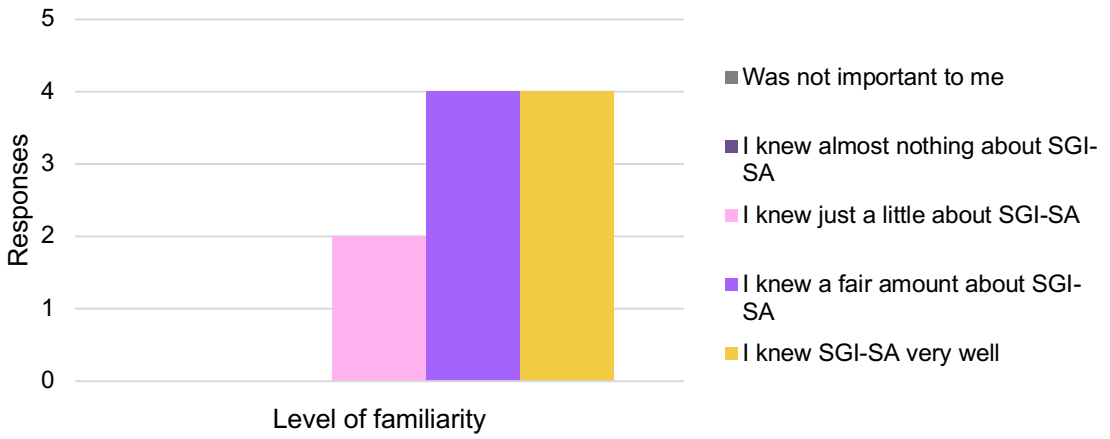


Figure 4-18: Sample A – Familiarity with SGI-SA

Almost all (N=2) of the post-2016 SGI-SA stakeholders said they "knew just a little about SGI-SA". This is unalike for pre-2016 stakeholders, who more resolutely believed they knew SGI-SA as a corporate business entity which undertook development, research and consultation at NWU. This may be due to these participants spending more time than the later stakeholders at the interest area itself. An even amount (N=4 and N=4) of responses reacted positively to the question, indicating a certain level of experience and exposure to operations at SGI-SA.

Generally, if SGI-SA could have achieved one thing during its time of functioning (2011-2019), the majority of Sample A participants would have enjoyed seeing the interest area succeed in creating meaningful, impactful serious game media. Many speak of the potential the institute had for completing projects to not only establish a community of practice in education, but to add value to the milieu of serious games as a genre for academic enquiry. One stakeholder stated: "During my time at SGI-SA, it was my dream to involve the IT (Information Technology) students in this niche area in some way." Participants also tell of the potential of serious games for teaching and learning and wished a product had been made that could have been adopted by various campuses in a range of geographical zones: "[I wanted to] develop a game that would be effective enough to be adopted by majority of the students on all 3 campuses [of NWU]", proclaimed one participant. Another goes on to say that: "I implemented the development of serious games in [my] modules, but was never able to get the concept of 'interns' off the ground as the students did not possess the required skills yet...there was not enough buy-in from the other members at SGI[-SA]."

Unfortunately, the wishes of these individuals were also stained with roadblocks to success. The focus of the team was brought into question by one respondent, who believed there should be a loftier vision in terms of creating educational artefacts:

> [We could have]...contributed positively to the community of practice and body of knowledge in the field of serious games.

Another stated that management did not enforce strict enough deadlines to promote good practice and work ethic in staff members:

> I believe we would have made more progress with management that drove us with deadlines. We were quite free to work at our own pace. With all the additional tasks handed to us (such as lecturing and research) it also didn't allow us to make as much progress as we would have liked.

Lastly, one respondent acknowledged the convoluted focus of stakeholders at SGI-SA to serve academic, support and development functions. Institutional mandates such as these may be the prime contender for overwhelming workloads and stakeholder frustration at the interest area (see Annexure B, Table B-4):

> The people working at SGI-SA were employed as lecturers. As such, their primary outputs had to be teaching learning and research. This left very little time for game development.

Another response suggests similar feelings towards the focus of stakeholders at SGI-SA:

> Working with projects in an academic environment was difficult due to the fact that it was new. Protocols were not in place and there was ignorance from the NWU towards the game industry which made the job aids etc. problematic. Uncertainty arises when producing a product and the institution has no idea in assisting with the law aspect, license, IP address owner and sometimes marketing.

4.2.4 Section 4: Sample A - Power, stakes and claims

Ten participants (N=10), including a blend of primarily development stakeholders involved in all four functional categories (development, publishing, context-related, supplementary), provided the following feedback regarding their own power, stakes and claims in relation to operations at SGI-SA:

Figure 4-19: Sample A - Did you approve funding at SGI-SA?

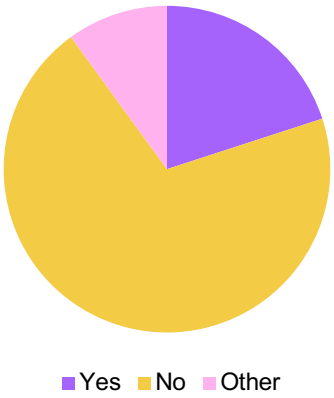
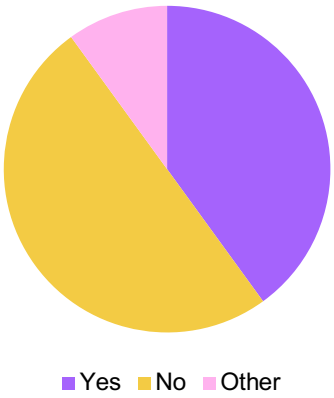


Figure 4-20: Sample A - Did you set vision/goals at SGI-SA?



According to data received in Section 4 of the survey, two (N=2) individuals had the power to refuse or approve funding at SGI-SA. Nevertheless, one (N=1) respondent answered “other” and stated that they were “supposed to make financial decisions but did not have access to the financial system”. The remaining 70% (N=7) of participants did not have the power to make funding-related decisions at SGI-SA. Interestingly, five (N=5) participants denoted that they had power to impact the vision and goals of the interest area. Four (N=4) responses said “no” and the final “other” response (N=1) stated that “all stakeholders could provide input” into where the serious games interest area was headed. This democratic power dynamic of setting goals and vision interestingly does not translate into funding decision-making, as only certain managerial (“development” / “publishing”) individuals (N=2) had the authority to do so.

Figure 4-21: Sample A - Did you approve changes which could impact costs at SGI-SA?

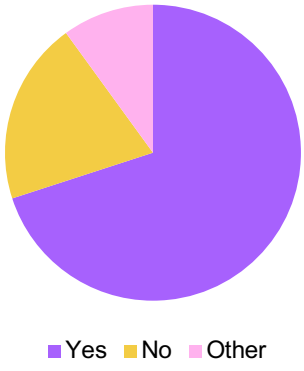
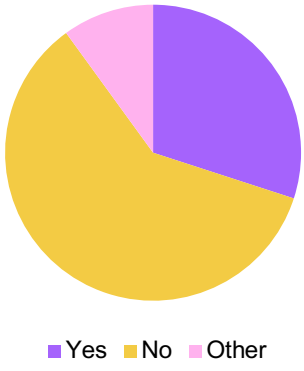


Figure 4-22: Sample A - Did you approve changes impacting "scheduling" at SGI-SA?



The majority (N=6) of participants said they did not have the influence to make changes at SGI-SA that would affect costs and expenditure. One (N=1) “other” response worryingly stated that they “should have been able to make decisions which would impact costs but was

inevitably unable to". This trend continues when considering responses regarding power and scheduling at the interest area. Sixty percent (N=6) of responses stated that they did not have the ability to leave an impression on the programme, timetable or plan at SGI-SA. Troublingly, one (N=1) "other" answer said that "…scheduling did not happen".

Figure 4-23: Sample A - Could you have stopped projects or initiatives at SGI-SA?

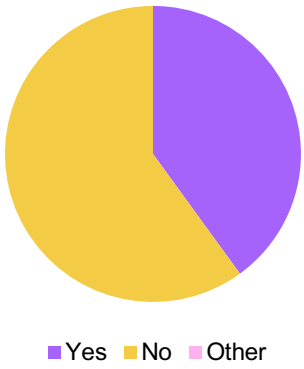


Figure 4-24: Sample A - Could you have benefited the most from operations at SGI-SA?

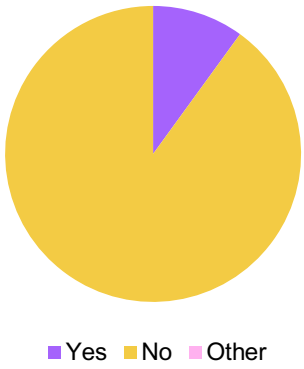


Figure 4-23 shows that 40% (N=4) of participants did have the claim to stop endeavours at SGI-SA, while 60% (N=6) say they did not. More transparently, 90% (N=9) of responses indicated they could not have been the stakeholder to benefit the most from operations at SGI-SA. This may be interpreted as the majority of stakeholders believing they are not the definitive stakeholders in the serious game development pipeline and that weight instead lies with other project stakeholders, i.e. end-users (players).

4.2.5 Section 5: Sample A - Additional thoughts and feelings

Significant to this study were the various organisational concerns raised by participants in Section 5, i.e. salary discrepancies; resignations; impotence; unbearable workloads; fuzzy corporate and business vision(s); directorial pressure; interpersonal issues; restricted funding; inadequate time; lacking support, impeding policies; and inexperienced employees. These operational grievances are known obstructions to successful working environments and corporate culture. Fortunately, the assorted T1 and T2 stakeholders from Sample A had some kind words to express about their colleagues (as additional comments regarding the interest area) and the initiative as a whole (see Annexure B, Table B-5). Important to note here is the fact that none of these stakeholders explicitly expressed any regulation regarding the percentage of time they need to invest in certain activities, i.e. education, research, or game development.

4.3 Survey responses: Sample B

Sample B comprised of four participants (N=4), including a single publishing stakeholder (N=1) and three context-related stakeholders (N=3). Notably, this sample grouping was adjusted during data collection as an additional context-related respondent was identified and surveyed.

4.3.1 Section 1: Sample B- Demographic profile

Figure 4-25: Sample B - Age

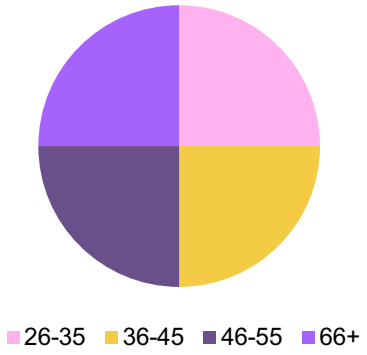
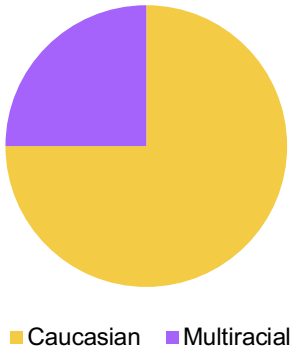


Figure 4-26: Sample B - Ethnicity



The age of the four (N=4) participants in Sample B varied significantly and included one respondent each from the following ranges: (i) 26-35; (ii) 36-45; (iii) 46-55; and (iv) 66+. More consistently, the majority of participants (N=3) identified as “Caucasian” and one (N=1) as “Multiracial”.

Figure 4-27: Sample B - Gender

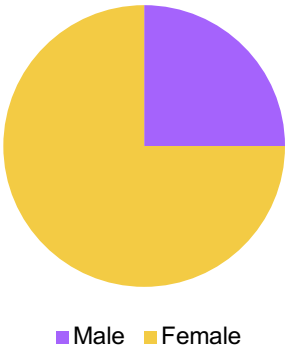
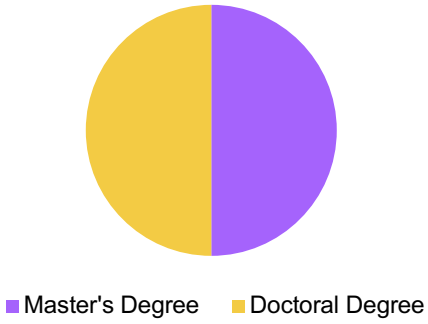


Figure 4-28: Sample B - Highest qualification



The majority (N=3) of Sample B was comprised of participants who identified themselves as “Female”; and one (N=1) respondent identified as “Male”. Furthermore, half (N=2) of these participants had master’s degree(s) in their respective fields and the other half (N=2) had a Doctoral degree(s).

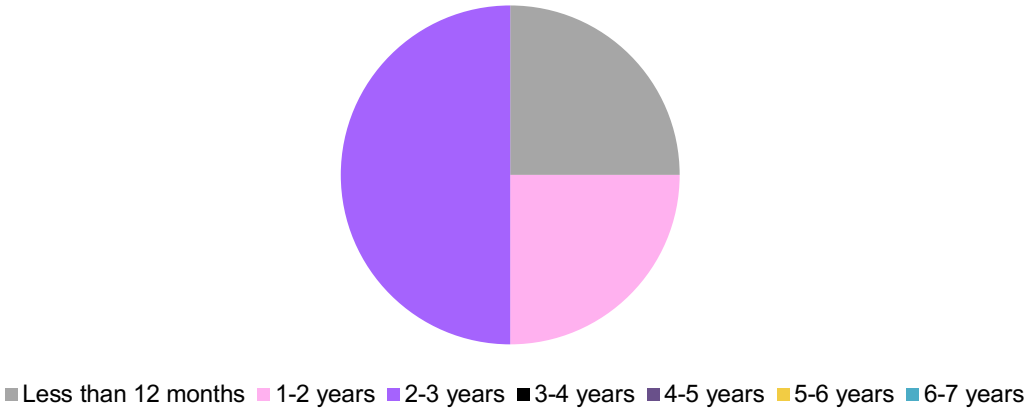


Figure 4-29: Sample B - Stakeholder involvement period

As can be seen in Figure 4-29, Sample B participants were involved with SGI-SA during different periods of time and for varying durations. In total, these participants indicated involvement spanning from January 2011 to June 2019 (7.5 years). The longest duration indicated by a respondent (N=1) was two and a half years (2.5 years), and the shortest was six months (0.5 years).

4.3.2 Section 2: Sample B- Stakeholder positions

Notably, the official job titles, descriptions and outcomes align with the various stakeholder positions selected in Section 2 of the survey. Participants indicated that they predominantly held positions relating to context-related activities, below:

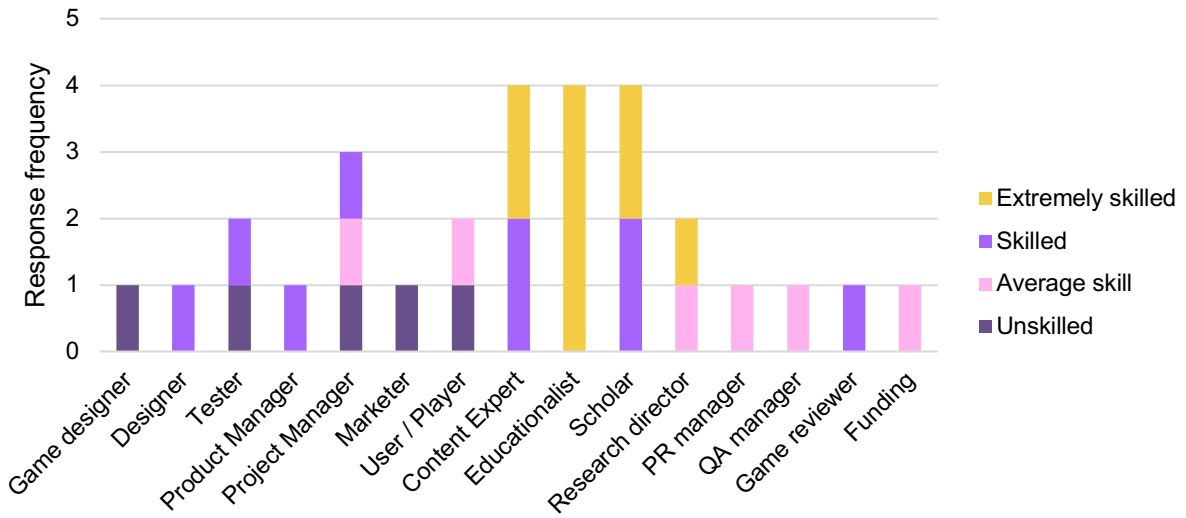


Figure 4-30: Sample B - Stakeholder positions

The positions occupied by Sample B during their time with SGI-SA follow certain trends: (i) N=4 responses indicated they were “extremely skilled” in their “Educationalist” position; (ii) N=2 responses were “skilled” as a “Content expert”; and (iii) N=2 responses were “skilled” in their “Scholar” position(s). The majority of responses therefore fall within the “Context-related” functional category put forward by the researcher in this study. Positions for “Content expert”, “Educationalist”, “Scholar” and “Research director” thus comprise the largest pool of responses, indicating a high degree of specialisation in this context.

4.3.3 Section 3: Sample B - Stakeholder activities and specialisations

Section 3 of the survey gathered qualitative data where participants verbalised in their own words their own experiences and perceptions. Verbs such as “develop”, “assist”, “manage”, “evaluate” and “provide” cropped up during Section 3 of the survey for Sample B. Notwithstanding the meaning of such words and their ties to the functional category of context-related stakeholders, the responses gathered indicate a level of unfamiliarity from these participants regarding what it was they were responsible for during their time with SGI-SA. Similar responses by each respondent would have indicated a semblance of understanding across time, activity and capacity dimensions. The inconsistency regarding stakeholder understanding of responsibilities within a specific functional category is therefore seen as a negative finding.

Inauspiciously, the following serious games were developed during Sample B’s time with SGI-SA: (A) *Liike*, (B) *Thabang’s Statventure* (prototype); and a (C) HISE 111 history concept. This means that only one complete serious game (*Liike*) was developed somewhere during these stakeholders’ time with SGI-SA from 2011 to mid-2019. Such a result does make sense, however, as context-experts typically act as transient stakeholders—who only provide information to the core development team until the serious game is completed and released.

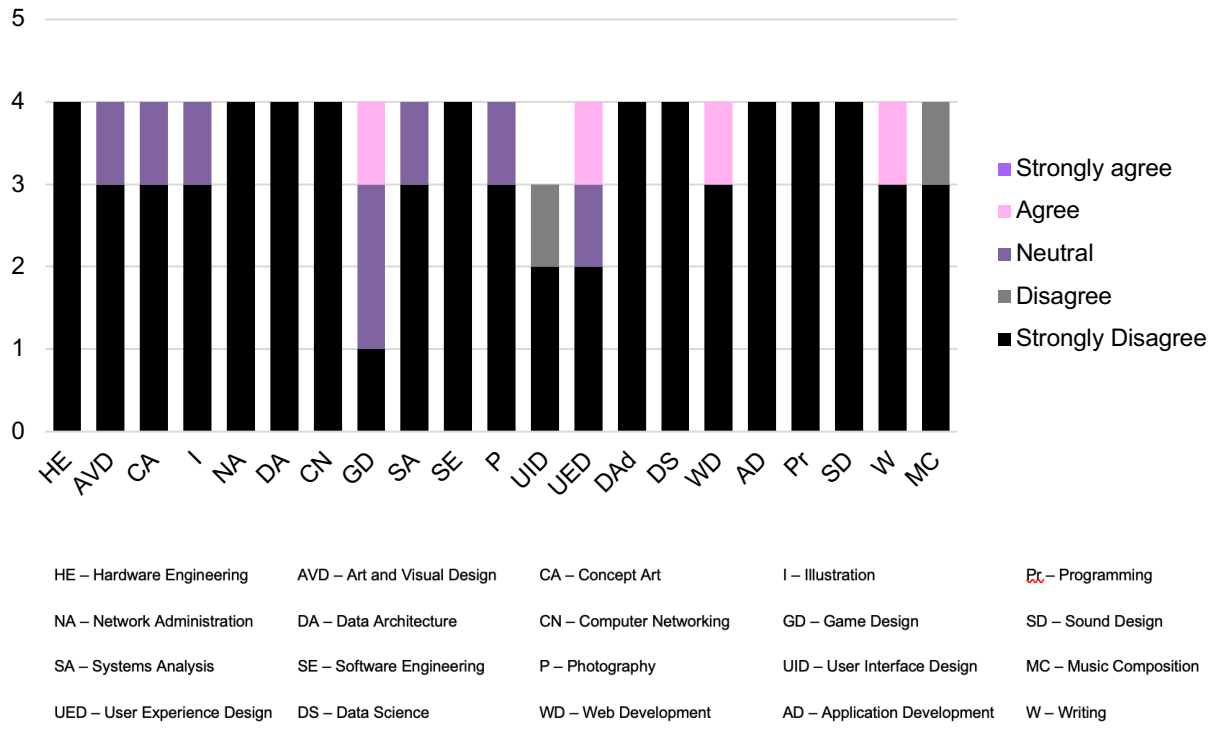


Figure 4-31: Sample B - Development activities

Sample B contributed consistent data regarding development activities and specialisations when working with SGI-SA. The majority of responses indicated unfamiliarity concerning: “Hardware engineering”; “Art and visual design”; “Concept art”; “Network administration”; “Data architecture”; “Computer networking”; “Systems Analysis”; “Software engineering”; “Photography”; “User interface design”; “Data science”; “Web development”; “Application development”; “Programming”; “Sound design”; and “Writing” (Figure 4-31). Lack of familiarity with these activities is juxtaposed with some knowledge of: (a) game design, (b) concept arts and illustration, as well as (c) user experience design. Despite the indicated lack of expertise in the other areas, the majority (N=3) of participants felt they were able to employ whatever degree of familiarity they had with these items whilst working with SGI-SA. The descriptions participants gave for the utilisation of their own field of expertise in relation to these development activities were as follows: “content contribution”, “writing text based on previous games played”, and “considerable experience with user experience studies and research”.

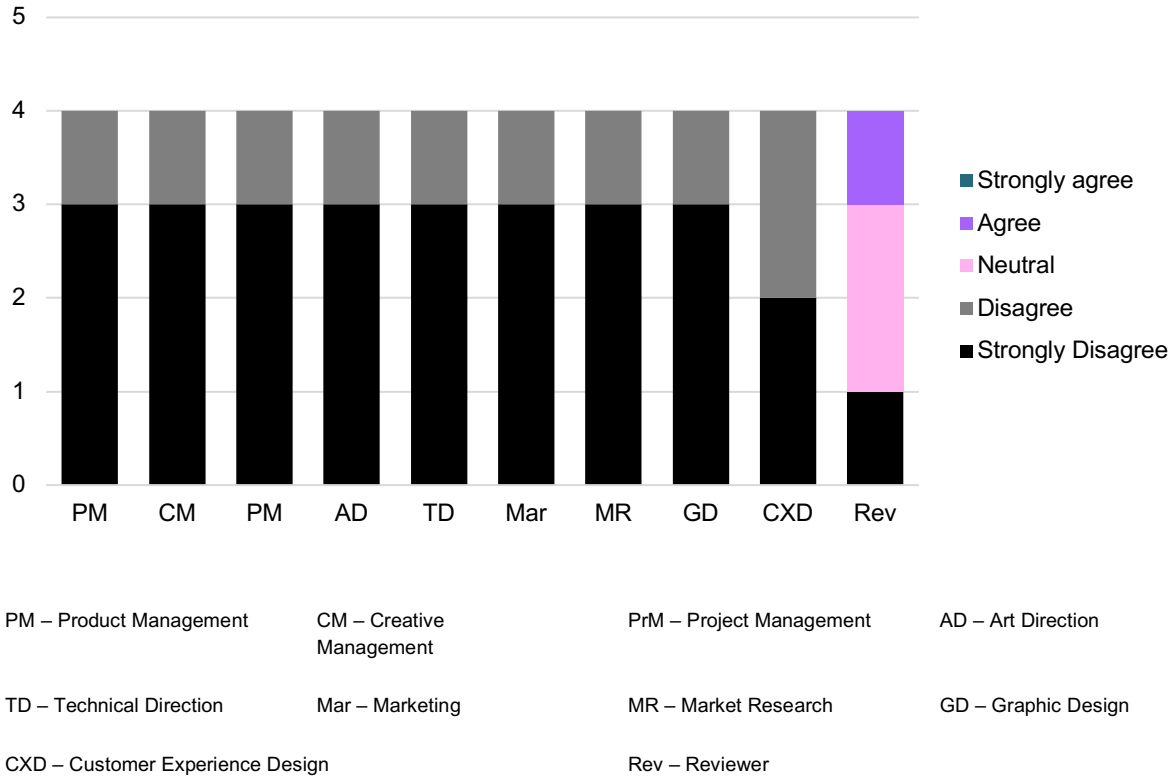


Figure 4-32: Sample B - Publishing activities

Sample B reported extremely low familiarity with publishing activities at SGI-SA. “Reviewing” was the only activity to receive neutral-to-agree responses from participants. Justifiably, these individuals were often expected to appraise and evaluate work done by core team members (Sample A) at regular intervals. This was done to ensure the pedagogical content in serious games was accurate and comprehensive enough to be developed further. The development cycle is strengthened by such an approach, but it is still concerning that little-to-none of Sample B were acquainted with management activities such as “Creative Management” or “Product Management”. These consulting stakeholders did have some [probable] level of power over executive decision-making at SGI-SA after all.

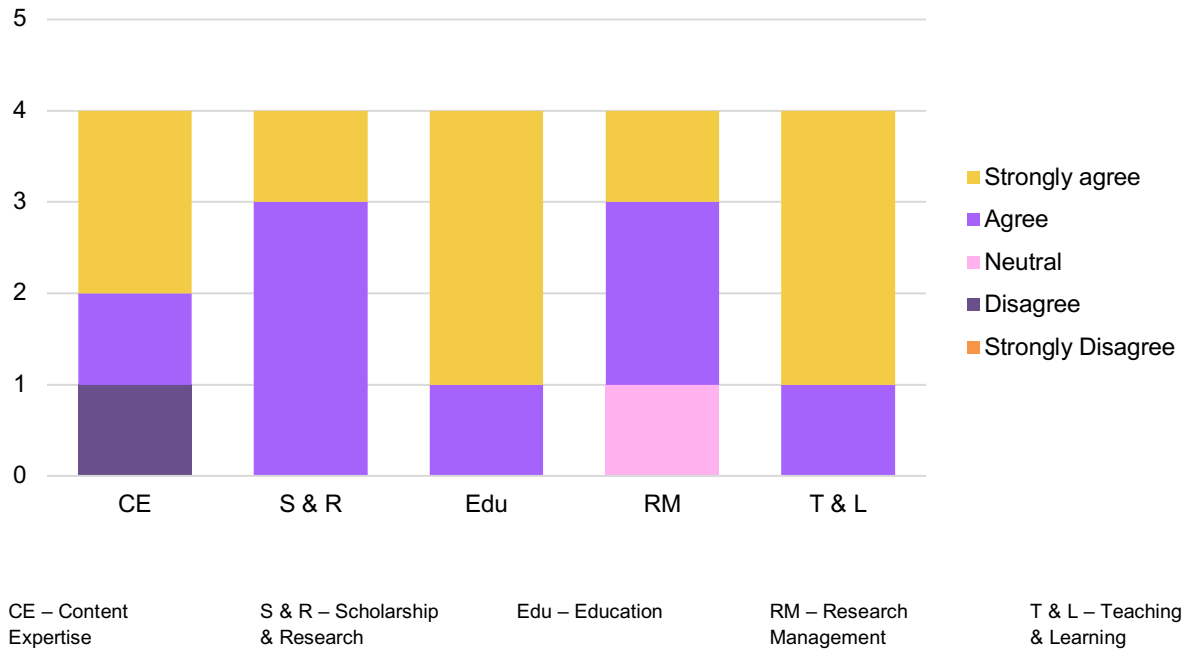


Figure 4-33: Sample B – Context-related activities

The results for context-related activities are unsurprising, as the majority of responses indicate familiarity with the informational, scholarly and academic items listed in the survey. “Content Expertise”, though, received one (N=1) “disagree”—perhaps denoting that the respondent was unfamiliar with the activities and responsibilities of such a position. Such a response strengthens the nescience discovered in Section 3 of the Sample B survey. As discussed earlier in this dissertation, taking the mantle of a content expert requires a specific set of skills which provide accurate, clear and contemporary subject field information and collections of study material to a project team of specialised project stakeholders to develop a serious game. It would be problematic for such a stakeholder category to misunderstand their role in the development process, which could potentially waste time, money and disrupt other ancillary resources such as reputation or communication channels.

One response (N=1) acknowledged context-related activities by expressing how they could “provide information in terms of characters and setting in a historically themed serious game”. All four (N=4) participants recognised the ties between their everyday work and what is required for successful content contribution to the project team (able to employ skills at SGI-SA).

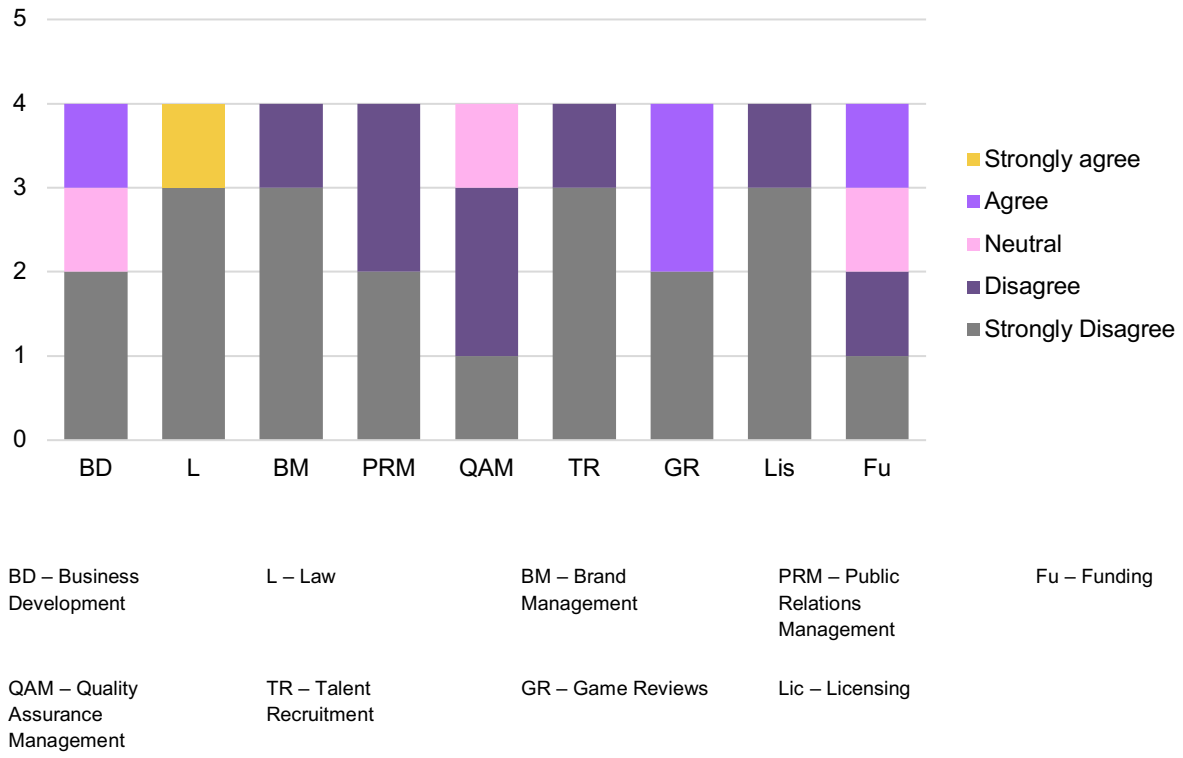


Figure 4-34: Sample B - Supplementary activities

Supplemental activities varied slightly from response to response. One (N=1) respondent suggested familiarity with “Business Development”, “Law” and “Funding” activities. This could potentially be because of the respondent’s day-to-day exposure to these undertakings, and not because of how they relate to a serious games interest area such as SGI-SA. The majority of responses, nevertheless, indicated low familiarity with the items relating to supplemental activities at SGI-SA. A respondent (N=1) described their utilisation of their field of expertise with these activities as “average” and did not feel they could use their skills in this area at SGI-SA. Another respondent (N=1) agreed with the first and did not agree that they could use their proficiencies. Alternatively, two participants (N=2) felt they could employ their skills here.

Annexure B, Table B-8 shows a rather negative perception regarding resource distribution at SGI-SA for Sample B. Most responses state dissatisfaction or frustration regarding the availability and access to physical assets (e.g. seating), equipment (e.g. laptop), information technology (e.g. software) and communication systems (e.g. video systems) available to ancillary/consulting team members.

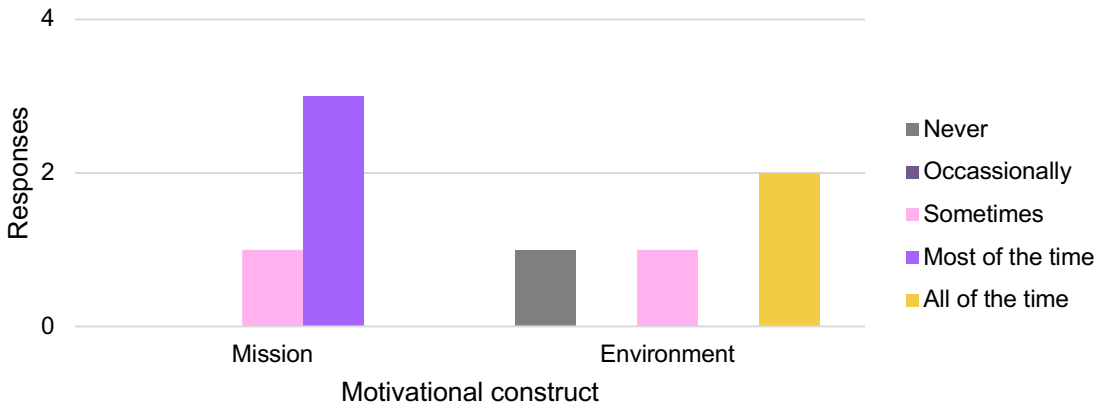


Figure 4-35: Sample B – Motivation according to Mission and Environment

The majority of participants felt fairly motivated by the mission of SGI-SA. Unfortunately, the same cannot be said for the environment (N=1 “Never” and N=1 “Occasionally”). This is a discouraging result, as responses should show that stakeholders at SGI-SA felt the goals and circumstances of the institute stimulated them to perform above expectations.

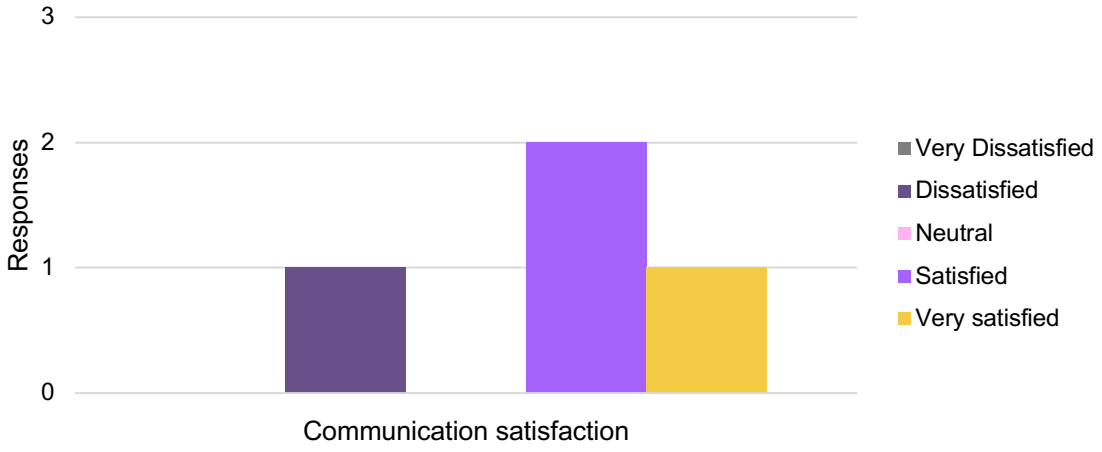


Figure 4-36: Sample B – Communication satisfaction

The majority (N=3) of participants expressed approval regarding communication satisfaction at SGI-SA. These stakeholders answered either “Satisfied” or “Very satisfied” with information exchange via writing, speaking or additional mediums at SGI-SA.

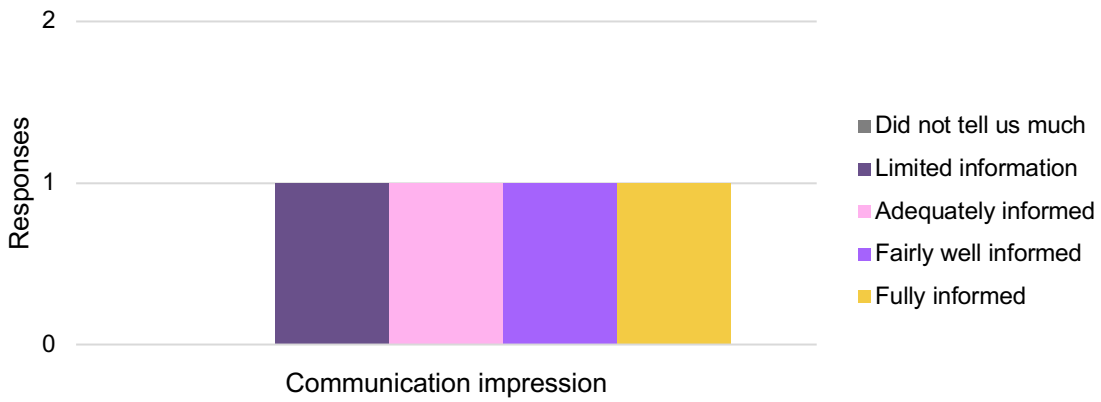


Figure 4-37: Sample B – Communication impression

The impression participants had with communicative practice at SGI-SA spreads across almost all available items. One respondent (N=1) felt they received “Only limited information”; another (N=1) was “Adequately informed”; and another (N=1) “Fairly well informed” about goings-on at the institute. Alarmingly, a negative response said they were not informed at all. This result equitably depicts the individual, subjective nature of consultation with a niche interest area such as SGI-SA. Communication experiences differ from practitioner to practitioner, especially considering core team members changed throughout the period of operations.

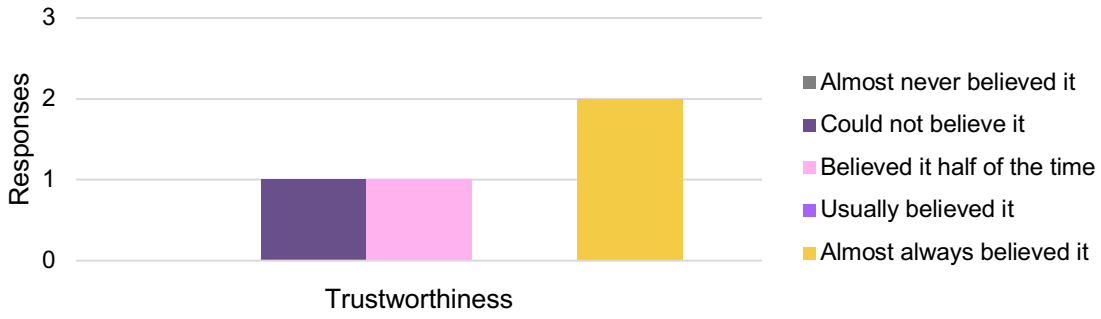


Figure 4-38: Sample B – Information trustworthiness

Figure 4-38 shows that facts, particulars and intelligence at SGI-SA could usually be relied upon as truthful by content matter experts; but some grey area existed, where information was only accepted half of the time (N=1) and could sometimes not even be believed (N=1). This finding is disconcerting, as consulting stakeholders should almost always believe information within an organisation.

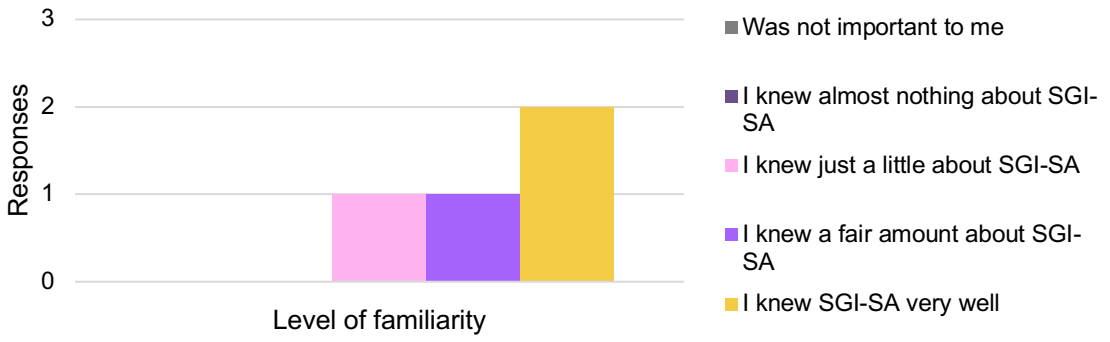


Figure 4-39: Sample B – Familiarity with SGI-SA

Comparatively, Sample B's level of familiarity with SGI-SA as a corporate business entity which undertook development, research and consultation at NWU mirrors that of Sample A—albeit reversed. Almost all (N=2) of the post-2016 SGI-SA stakeholders said they "knew SGI-SA very well". This is contradictory for pre-2016 stakeholders, who believed they knew less about SGI-SA as a corporate entity. Such a result may be due to the core team members from Sample A whom have corresponded with these Sample B participants.

For Sample B, if SGI-SA could have achieved one thing during its time of functioning (2011-2019), they would have: (i) adapted to changes made by the broader institution (NWU); (ii) kept the drive, energy and passion team members had in earlier years; and (iii) been honest with content matter experts about the practicality of project(s). These inputs by participants may seem unforgiving and tough, but they provide much needed constructive criticism to proceedings at the now-defunct interest area. The NWU underwent restructuring from 2016 to 2018 and made waves for all smaller groups and interest areas associated with the HE institution. SGI-SA could have scaled their team and projects down accordingly, but no such thing happened. Moreover, the *en masse* resignation of almost all of the original (T1) core team at SGI-SA (brought about—in part—by the convoluted focus of stakeholders to serve academic, support and development functions) in 2016 did not help matters. This caused the loss of momentum brought up by one respondent. Projects were put on hold, equipment was left unattended and managerial focus shifted to repopulating the interest area with new people. Many of the aforementioned challenges brought about concerns regarding the codes identified in this section, i.e. vision and mission of the interest area, adaptability of the team, and expectation management of both internal and external stakeholders.

Not all of the feedback was critical, however, as one respondent praised the core team (Sample A) for going above and beyond the call of duty. These individuals aided the "context-related"

stakeholder even when their job descriptions did not support their obligations(s) to do so. Furthermore, the “publishing” stakeholder had the romantic vision for all stakeholders at SGI-SA to realise their dreams and reach their goals. The above-mentioned views were recorded for post-2016 stakeholders (see Annexure B, Table B-9).

4.3.4 Section 4: Sample B - Power, stakes and claims

Four participants (N=4), including one publishing stakeholder (N=1) and three context-related stakeholders (N=3), provided the following feedback regarding their own power, stakes and claims in relation to operations at SGI-SA:

Figure 4-40: Sample B - Did you approve funding at SGI-SA?

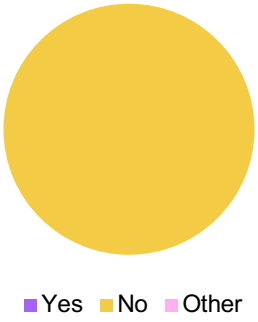
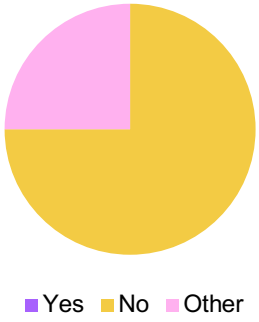


Figure 4-41: Sample B - Did you set vision/goals at SGI-SA?



None (N=0) of the participants felt they had the power to approve funding activities at SGI-SA (Figure 4-40). Despite this, the publishing stakeholder (N=1) from this sample believed they collaborated with students to determine the direction of operations at SGI-SA (vision and mission) in Figure 4-41. This stance places power in the hands of publishing/supplementary stakeholders as not merely users but significant stakeholders in affecting publishing operations at SGI-SA.

Figure 4-42: Sample B - Did you approve changes which could impact costs at SGI-SA?

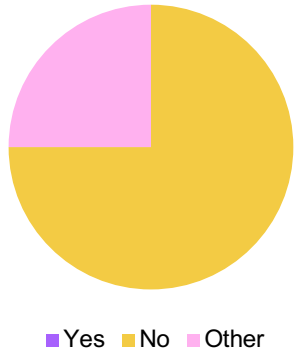
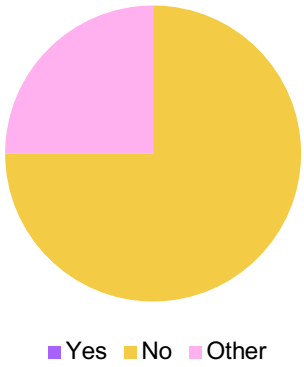


Figure 4-43: Sample B - Did you approve changes impacting "scheduling" at SGI-SA?



Interestingly, the publishing stakeholder (N=1) had the ability to approve changes as a part of SGI-SA (through TELIT-SA) to affect expenditure (Figure 4-42). The same respondent (N=1) further acknowledged that scheduling matters at SGI-SA (Figure 4-43) were mostly decided "outside" of the research unit. The content expert stakeholders (N=3) expressed that they did not have the power or claims to affect either costs or scheduling at SGI-SA.

Figure 4-44: Sample B - Could you have stopped projects or initiatives at SGI-SA?

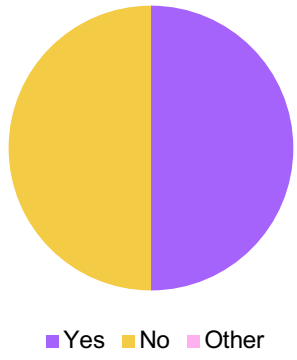
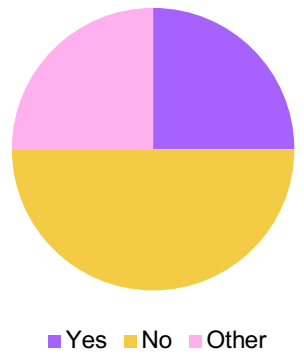


Figure 4-45: Sample B - Could you have benefited the most from operations at SGI-SA?



A single context-related participant (N=1) and one (N=1) publishing participant agreed that they had the power to halt or stop initiatives at SGI-SA (Figure 4-44). The other two (N=2) participants believed they did not have such authority. Figure 4-45 shows mixed opinions regarding the dominant stakeholder(s) at SGI-SA. Two (N=2) "no" (publishing + context-related) responses and one (N=1) "yes" response (context-related) was collected from the blend of participants. Intriguingly, one (N=1) of the context-related participants answered "other" as to whether or not they were a stakeholder which could have benefited the most from activities at SGI-SA. The reason for this response indicates a soft "yes", as they are

disappointed that the support unit is no longer in place to support their “game-based teaching and learning approach”.

4.3.5 Section 5: Sample B - Additional thoughts and feelings

Annexure B, Table B-10 reveals significant codes relating to serious game development such as project continuation and project plan. Concerns were voiced regarding the scale of projects and the often-daunting nature of completing these projects with limited team members and/or resources. Proactive expectation-management could potentially relieve these trepidations and improve overall stakeholder effectiveness. Transparency and setting clear deliverables are means to ensure the experience of developing SGs is valuable for all.

4.4 Survey responses: Sample C

Sample C comprised three participants (N=3), including students from the North-West University, Vanderbijlpark campus. Two of the responses gathered had to be omitted, as their survey feedback was either lacking or incomplete. This sample grouping, therefore, was adjusted during data collection. A total of 124 students were enrolled for this course, and were tasked with iterating on an existing serious game concept by the researcher during the first semester of 2019. These stakeholders are therefore ‘affected’ stakeholders and not ‘primary’ stakeholders. **Please note that five (N=5) participants were proposed for this sample in Chapter III.*

4.4.1 Section 1: Sample C- Demographic profile

Figure 4-46: Sample C - Age

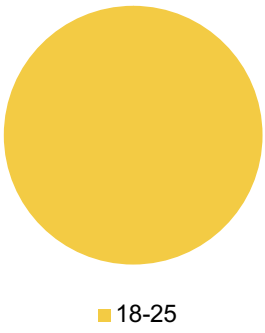
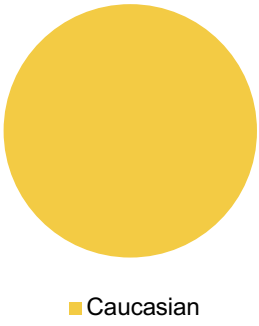


Figure 4-47: Sample C - Ethnicity



The three (N=3) participants in Sample C all fell within the same age range: 18-25 years of age. Furthermore, every respondent (N=3) identified as “Caucasian”. Sample C can thus be described as young and white in terms of age and ethnicity, respectively.

Figure 4-48: Sample C - Gender

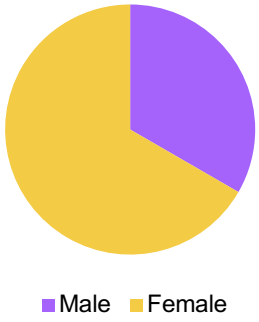
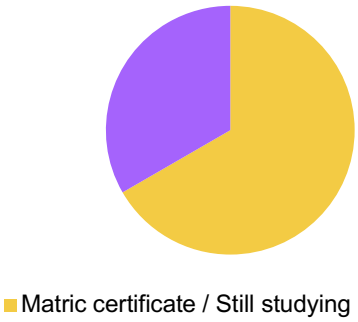


Figure 4-49: Sample C - Highest qualification



The bulk (N=2) of Sample C comprised of participants who identified as “Female”; and one (N=1) as “Male”. Most (N=2) of the participants had Matric certificate(s) and one (N=1) had preferred not to disclose their highest qualification.

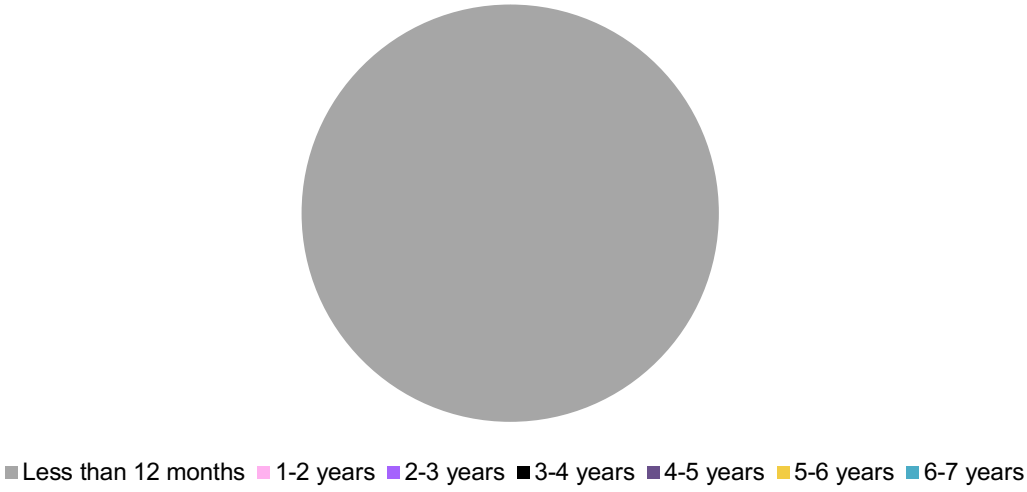


Figure 4-50: Sample C - Stakeholder involvement period

Figure 4-50 shows how Sample C was involved with SGI-SA for a very short time (four months) in 2019. This result is indicative of the transitory nature of students within the HE system. Typically, they study for three years to attain a bachelor’s degree—or sometimes four years for an honours degree—and then move out into the workforce and seek employment in industry. This means that the researcher did not have access to students who were studying at NWU from 2011 to 2015. Access restrictions such as these are regrettable, as it would have been ideal to survey students who were active players of SGI-SA media during their time of functioning. Nevertheless, the small sample (N=3) were only exposed to SGI-SA for a diminutive period of time.

4.4.2 Section 2: Sample C - Stakeholder positions

All of the official job titles, descriptions and outcomes for Sample C support the various stakeholder positions selected for Section 2 of the survey, but differ from the typical role(s) an end-user or player will fulfil independently from the serious game interest area. Participants were involved with a serious game project led by the researcher during the first semester of 2019, where they were expected to iterate on an existing SGI-SA product: *Queen & Country*. Characteristically, the student target audience of such an institute would not perform active duties such as design or development. None of the participants would have had official titles or job descriptions if this were the case (or if earlier users of SGI-SA media were surveyed). Sample C is consequently a special instance where users were involved with project undertakings at SGI-SA.

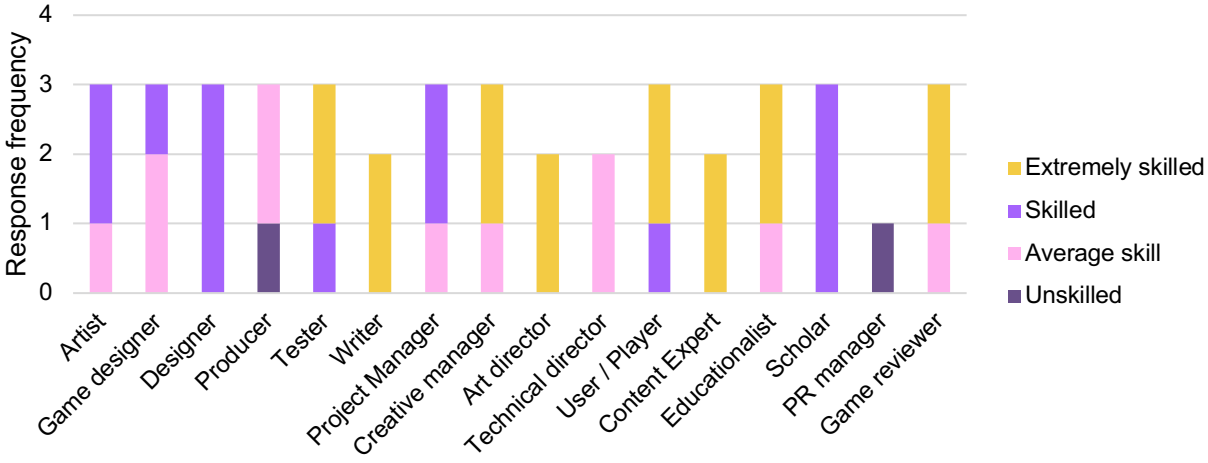


Figure 4-51: Sample C - Stakeholder positions (development, publishing, context-related and supplementary, collated)

Occupied positions by Sample C during their time with SGI-SA showed perceived “Extreme skill” in the following areas: “Tester” (N=2), “Writer” (N=2), “Creative Manager” (N=2), “Art director” (N=2), “User/Player” (N=2), “Content expert” (N=2), “Educationalist” (N=2), and “Game reviewer” (N=2). Three of these positions were expected to be filled by the researcher, i.e. tester, user and game reviewer. The nature of these stakeholders, however, expanded these anticipated responsibilities into other areas.

Still, this should not be viewed as a negative or skewed data set, but rather an opportunity to record the perceptions of student stakeholders and the potential they see for themselves to play a more active role in developing serious games media.

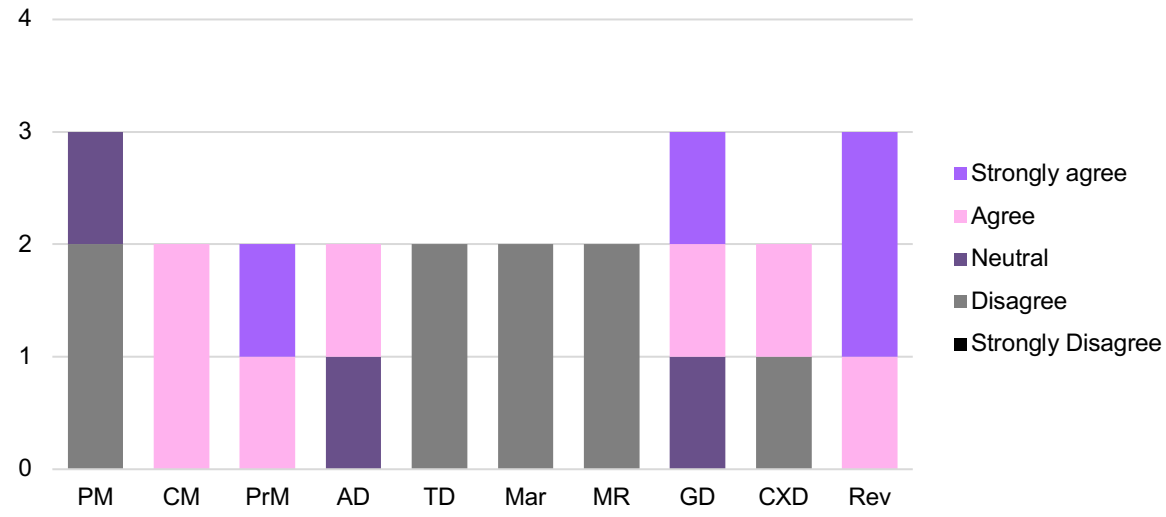
“Not applicable” (N/A) was chosen for the following positions:

- Programmer;
- Sound designer;
- Product manager;
- Marketer;
- Lawyer;
- Business manager;
- Quality Assurance (manager);
- Business developer;
- Talent recruiter;
- Licensor; and
- Funding body.

4.4.3 Section 3: Sample C - Stakeholder activities and specialisations

A probable answer from a student stakeholder involved with activities at SGI-SA would read something like: “I was expected to download and play the game for my module at NWU”; or “Our lecturer wanted us to play the board game during class time”. These expected rejoinders are contrasted by the genuine responses received. As mentioned before, these students completed a project wherein they were tasked with iterating on an existing serious game concept. Verbs such as “create”, “develop” and “redevelop” are therefore unsurprising for this sample, but would only be foreseen if participatory design was undertaken by the core development team, i.e. Sample A.

Like Sample B, the responses for this question indicate unfamiliarity from participants towards their serious game responsibilities at a HE institution. This time responses tie them to functional categories which are unexpected for presumably “development” (tester) and “publishing” (user/player) stakeholders. The story would likely have been different had stakeholders from previous generations taken the survey.



PM – Product Management
CM – Creative Management
PrM – Project Management
AD – Art Direction
TD – Technical Direction
Mar – Marketing
MR – Market Research
GD – Graphic Design
CXD – Customer Experience Design
Rev – Reviewer

Figure 4-52: Sample C - Publishing activities

Publishing skills or the perception of expertise in these areas are varied for Sample C. Variables for “Project Management”, “Graphic Design” and “Reviewer” received the most positive responses; while “Technical Direction”, “Marketing” and “Market Research” received the adverse share of responses. This is understandable, as Sample C is exclusively made up of young individuals from a specific field of scholarship who may not be exposed to these concepts during their studies.

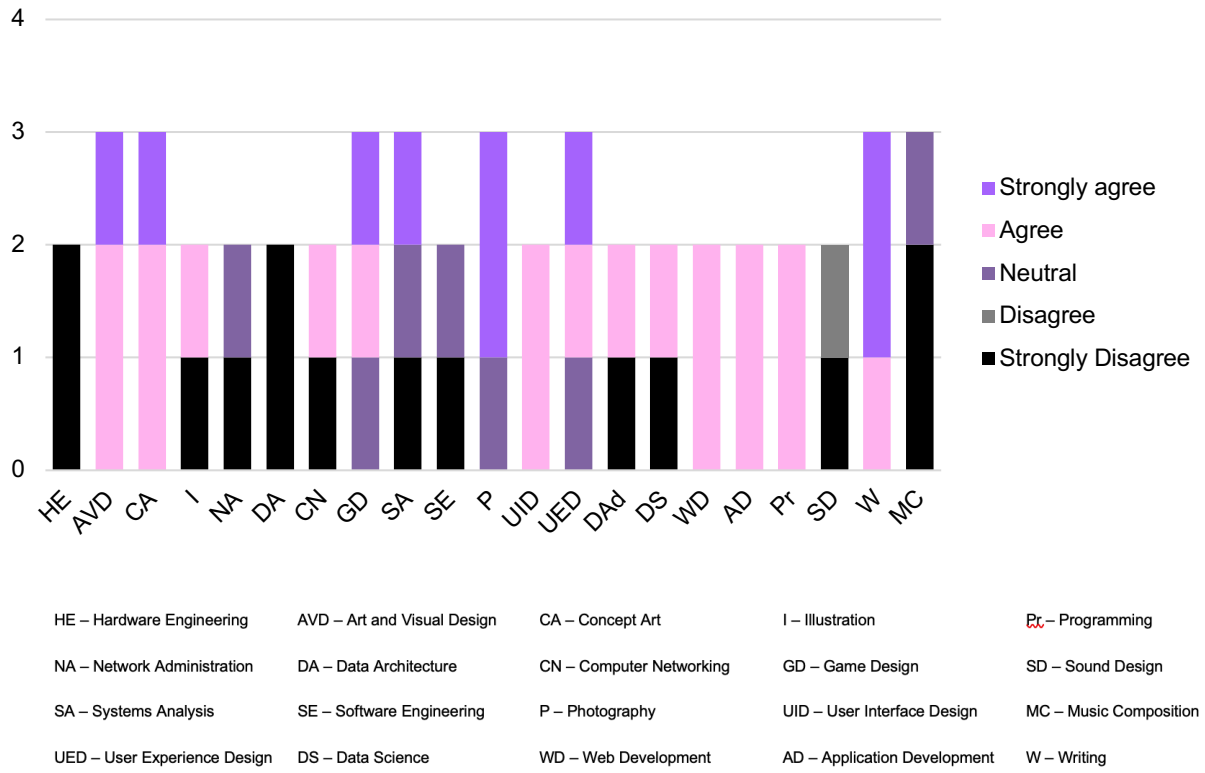


Figure 4-53: Sample C - Development activities

Sample C was wholly comprised of students registered at the School of Computer Science and Information Systems. This affords them specific skills or at least the perception of skill in areas which are specialised for digital serious game design and development. Students from other disciplines would consequently respond differently from this particular sample. Majority (N=2) strongly agree responses were collected for “Photography” and “Writing”. Furthermore, dominant (N=2) agree responses were recorded for: “Art and Visual Design”; “Concept Art”; “User Interface Design”; “Web Development”; “Application Development”; and “Programming”. It cannot be assumed that familiarity with these “development” activities will be analogous for all users of serious game media at a HE institute, as these individuals rarely have the expertise or experience to expertly contribute to the creation of serious games.

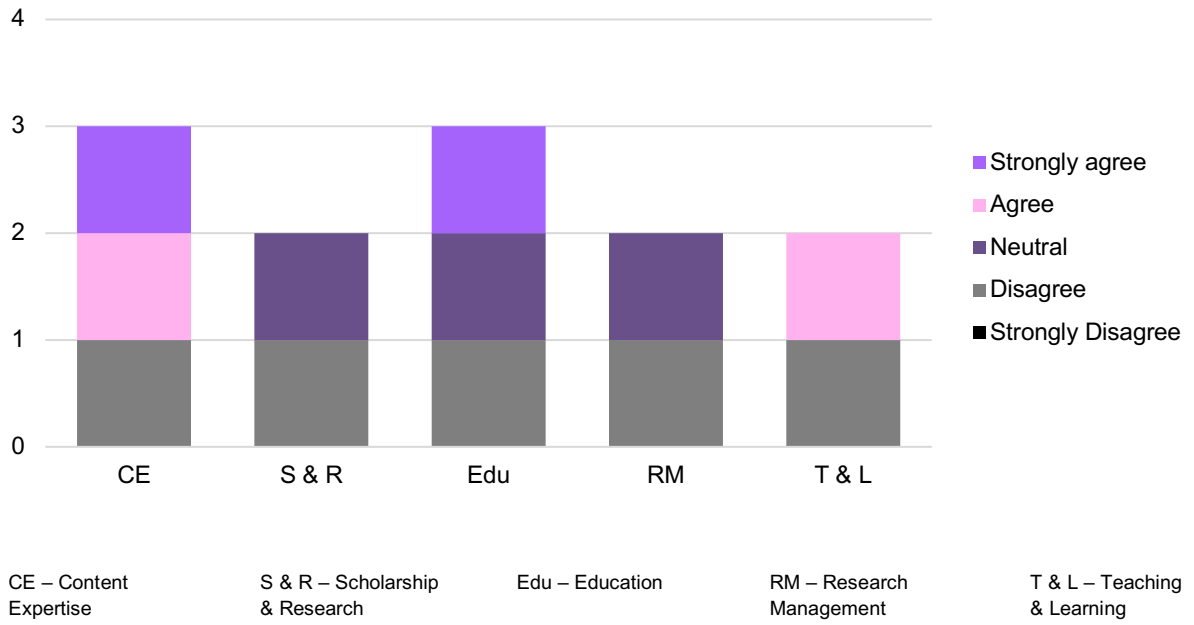


Figure 4-54: Sample C – Context-related activities

As students registered at NWU, Vanderbijlpark campus, Sample C were expected to be acquainted with certain items in the "context-related" category (i.e. "Education" and "Content expertise"). Both "Education" and "Content Expertise" affirmed this expectation with N=1 agree and N=1 strongly agree. This stakeholder grouping therefore complies with the researcher's expectation that users of serious games at SGI-SA typically did not (a) conduct research, (b) manage research, or (c) teach at a HE institution.

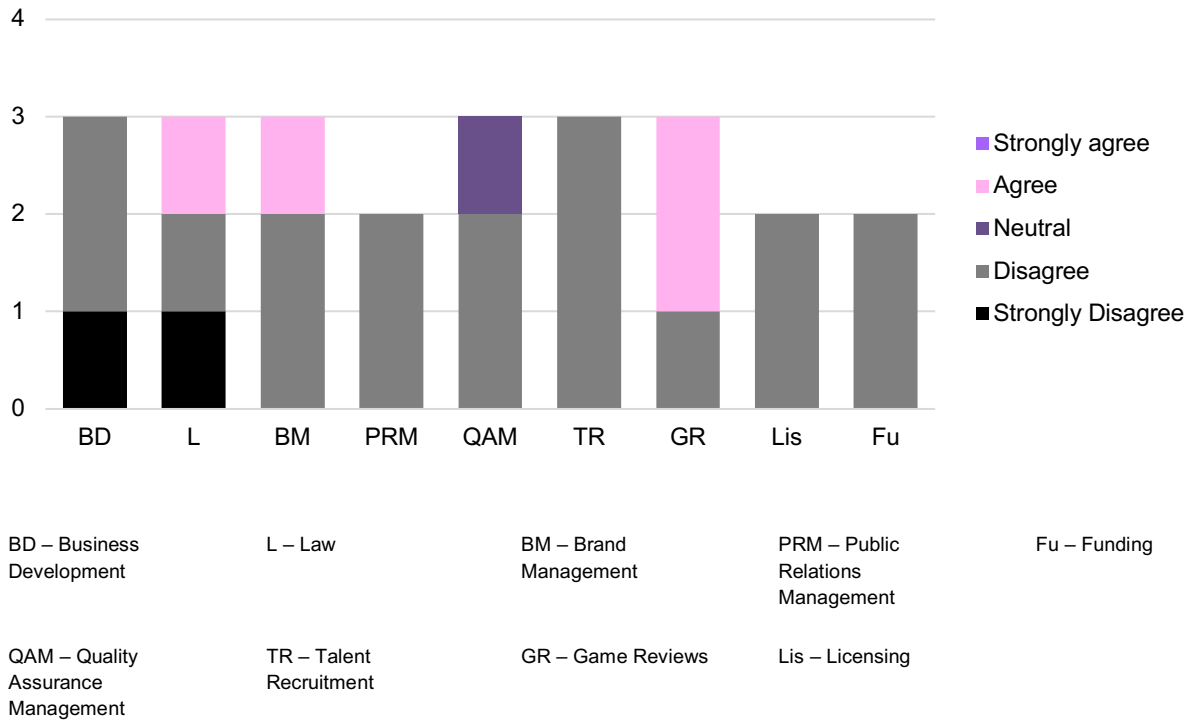


Figure 4-55: Sample C - Supplementary activities

Figure 4-55 shows a lack of familiarity with "supplementary" activities at SGI-SA. The only activities which indicate some level of fluency are "Law" (N=1, Agree), "Brand Management" (N=1, Agree) and "Game Reviews" (N=2, Agree). The majority of responses were negative (Disagree) towards the items listed in this category. Sample C were not expected to be involved or accustomed with these activities—except for "Game Reviews"—which did receive positive feedback. Supplementary activities, thus, were typically performed internally by core stakeholders in Sample A or by external parties not referenced in the survey disseminated to the sample for this study. An additional stratum of stakeholder activity is now brought to surface and may conditionally be referred to as "ancillary consulting" stakeholders who perform duties for such an interest area.

Notably, Annexure B, Table B-13 paints a positive picture regarding Sample C's perceptions of tooling and resources at SGI-SA. Academic support is an additional dimension brought up by this stakeholder grouping, as they would require guidance from their lecturer/advisor regarding certain aspects of the serious game iteration project.

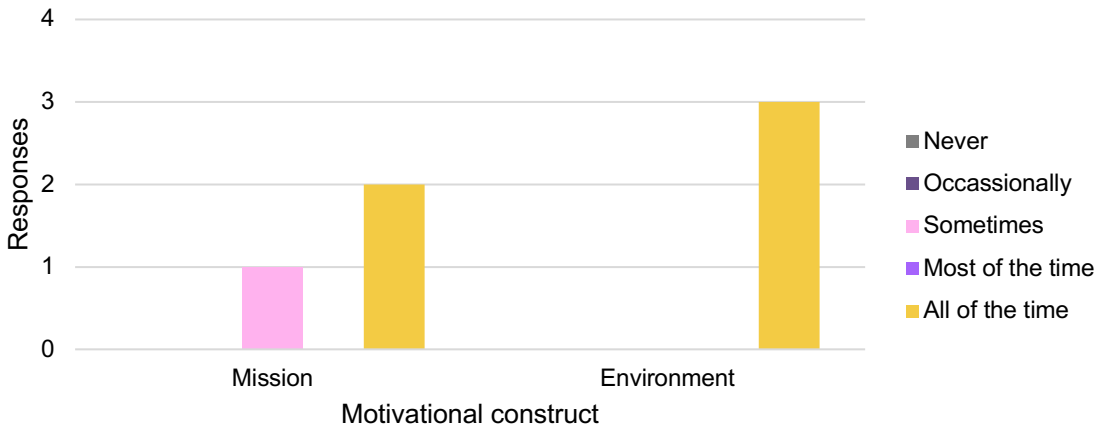


Figure 4-56: Sample C – Motivation according to Mission and Environment

Participants felt motivated by both the mission of SGI-SA as well as the environment encompassing the institution. This is an affirmative result, as responses should show that player stakeholders at SGI-SA felt the goals and circumstances of the institute stimulated them to take part in activities and appreciated the experience.

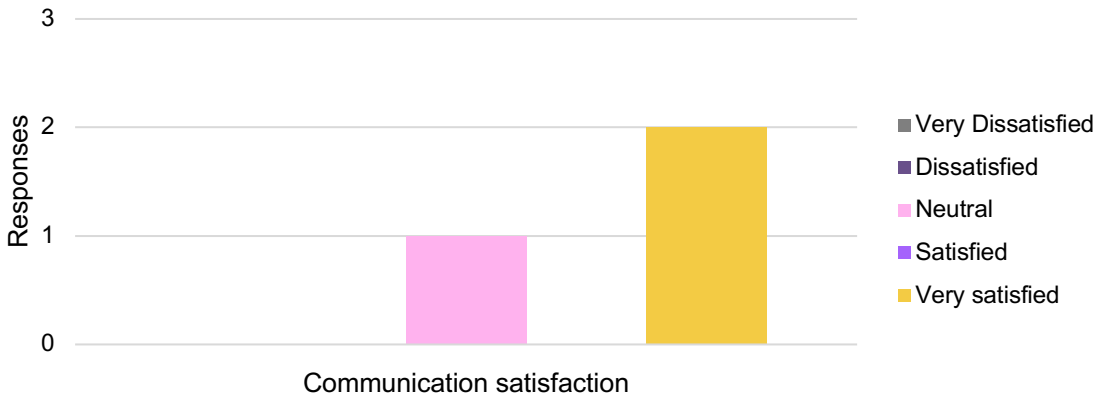


Figure 4-57: Sample C – Communication satisfaction

The majority (N=2) of participants expressed approval for communication going on at SGI-SA. These stakeholders answered “Very satisfied” with information exchange via writing, speaking or additional mediums from SGI-SA.

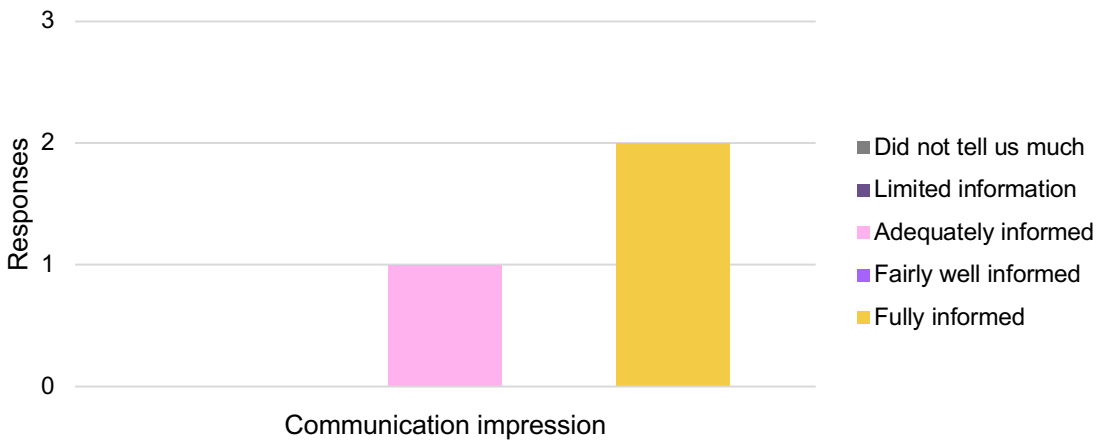


Figure 4-58: Sample C – Communication impression

The communication impression of SGI-SA was that it kept consumers (students) “Adequately informed”; and the other two (N=2) “Fully informed” about goings-on at the institute. No recorded responses indicated that they were not informed at all—which is a good result. Communication experiences will vary from user to user; especially considering that Sample C is a homogenous respondent group.

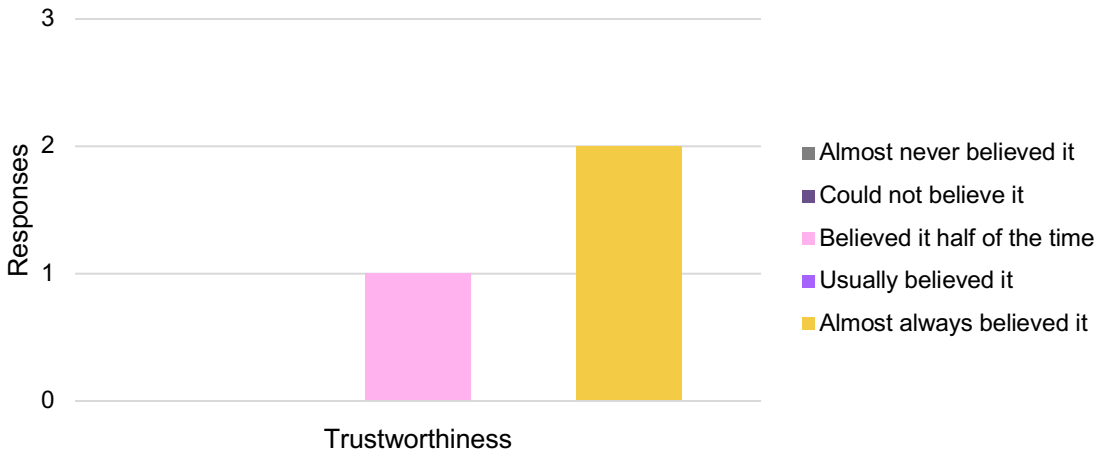


Figure 4-59: Sample C – Information trustworthiness

Figure 4-59 demonstrates that facts, particulars and intelligence about and from SGI-SA could frequently be relied upon by end-users (N=2). However, some grey area existed, where information was only accepted half of the time (N=1). This finding is encouraging, as any customer stakeholder should believe information provided by an organisation.

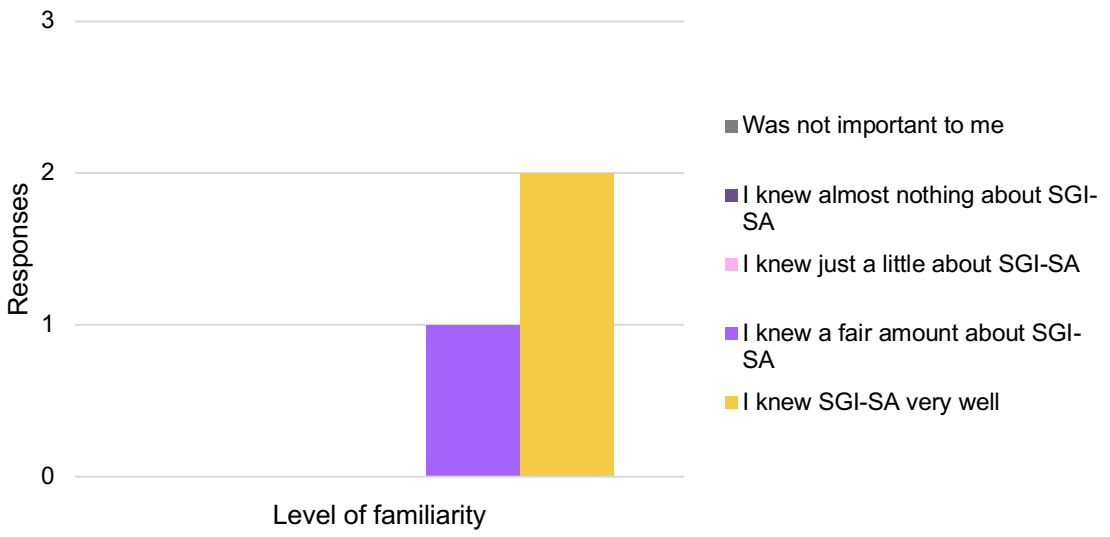


Figure 4-60: Sample C – Familiarity with SGI-SA

Surprisingly, the majority of post-2016 stakeholders (N=2) in Sample C said they "knew SGI-SA very well". This shows that the researcher introduced these individuals to SGI-SA in a comprehensive and thorough way. In retrospection, the researcher dedicated a single ninety-minute contact session to introducing his students to serious game theory and SGI-SA during the first semester of 2019. This is hence a positive finding.

Strong familiarity with the interest area also speaks to the prospects and expectations of Sample C stakeholders for SGI-SA as a functional unit. Response 2 (Annexure B, Table B-14), though, shows an interpretation error by a respondent who thought the question related to the serious game project computer science students were expected to complete in 2019. Despite this, the other two responses regarding SGI-SA hopes and dreams, align with the researcher's expectation for "consumer-esque" stakeholders to seek serious game products which provide both pedagogic (instructive) and ludic (entertaining) elements. User stakeholders, therefore, expect quality products which fulfil their needs for both fun and education.

4.4.4 Section 4: Sample C - Power, stakes and claims

Three participants (N=3), all of whom were proverbial "testers" and "players" of SGI-SA products provided the following feedback regarding their own power, stakes and claims in relation to operations at the interest area:

Figure 4-61: Did you approve funding at SGI-SA?

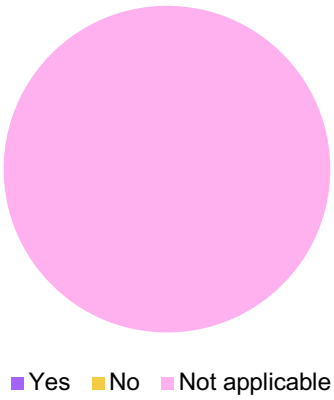
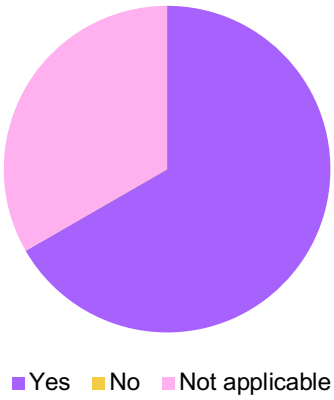


Figure 4-62: Did you set vision/goals at SGI-SA?



Nobody felt they had the power to approve funding at SGI-SA (Fig 4-61). All three (N=3) participants replied “N/A” to this query. Interestingly, two (N=2) felt they could set the visions and/or goals at SGI-SA (Fig 4-62). This should probably be interpreted within the context of the group project to iterate on a serious game called *Queen & Country*. They were hence empowered enough to make decisions and claim stakes within their peer groups.

Figure 4-63: Did you approve changes which could impact costs at SGI-SA?

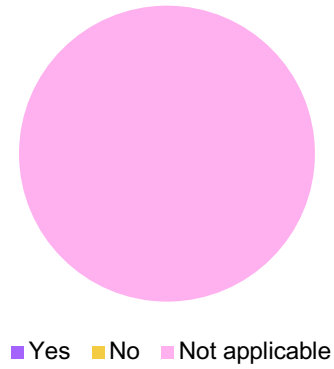
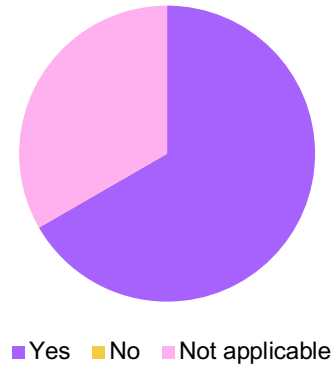


Figure 4-64: Did you approve changes impacting "scheduling" at SGI-SA?



Similarly, to the trend set above, the three (N=3) participants answered “N/A” when asked if they could approve changes which could have affected costs incurred at SGI-SA (Fig 4-63). In Figure 4-64, two (N=2) of the three expressed that they could, however, make decisions relating to scheduling at SGI-SA. These individuals again expressed confidence in their ability to impact on development within their own teams. This would have likely not been the case with actual project implementation at SGI-SA.

Figure 4-65: Could you have stopped projects or initiatives at SGI-SA?

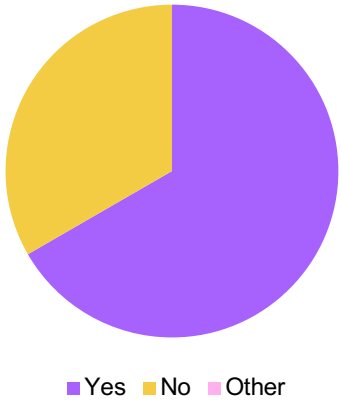
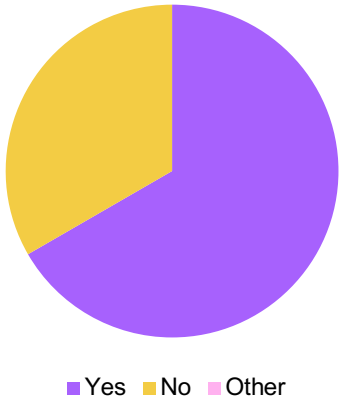


Figure 4-66: Could you have benefited the most from operations at SGI-SA?



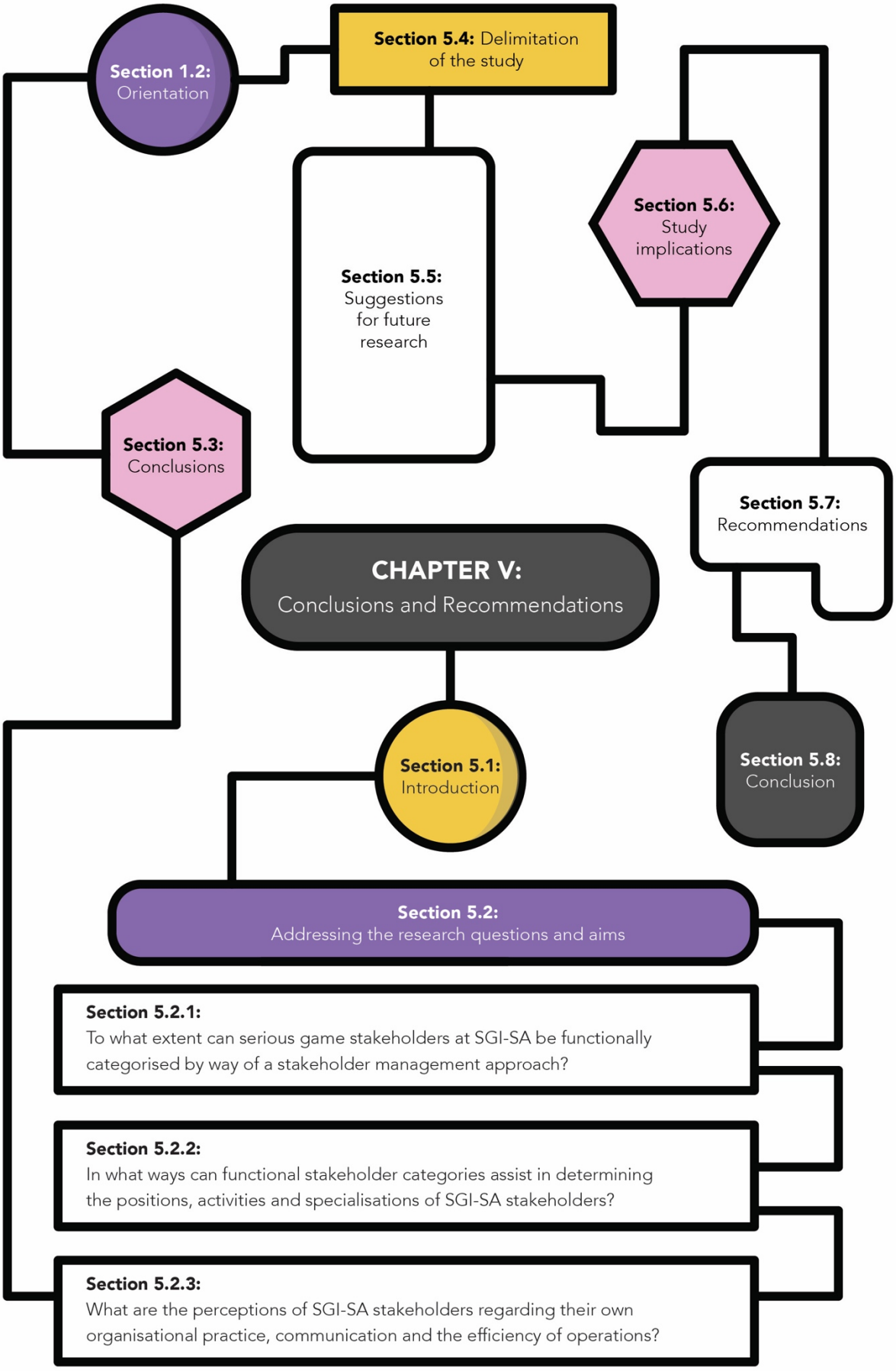
Two participants (N=2) established that they had the power to stop initiatives at SGI-SA (Figure 4-65). The other one (N=1) believed they did not have such authority. The next figure (Figure 4-66) shows a similar ratio (N=2 “Yes” / N=1 “No”) to the first, but with emphasis on how the majority felt they could have potentially benefited the most from activities at SGI-SA.

4.4.5 Section 5: Sample C - Additional thoughts and feelings

Not many additional views regarding SGI-SA were shared by Sample C (Annexure B, Table B-15). One respondent (N=1) did, however, express how creating a serious game improved their learning experience. This portrays active participation in the creation of serious game media as a positive practice. Future serious game interest areas could include students in their endeavours to inspire them and foster an environment of collaboration and further develop inclusive programs. Participatory SG design with students at HE institutions therefore warrants further exploration.

4.5 Conclusion

This basic communication case study research sought to gather the perceptions of stakeholders within the serious game design context of SGI-SA. The milieu of SGI-SA at the NWU was used as a reference for the application of four functional categories to develop stakeholder classifications for serious game design. Consolidating the various responses of stakeholders from an online survey made clear who exactly is required to successfully manage and operate an SG development team within the realm of HE and painted a broader picture of the interest area under investigation. Findings from the study reveal that communication indeed played a role in shaping the perspectives and experiences of stakeholders in this context. Further findings are discussed in Chapter V.


Section 1.2: Orientation
Section 5.4: Delimitation of the study
Section 5.5: Suggestions for future research
Section 5.6: Study implications
Section 5.3: Conclusions
Section 5.7: Recommendations
CHAPTER V: Conclusions and Recommendations
Section 5.1: Introduction
Section 5.8: Conclusion
Section 5.2: Addressing the research questions and aims
Section 5.2.1: To what extent can serious game stakeholders at SGI-SA be functionally categorised by way of a stakeholder management approach?
Section 5.2.2: In what ways can functional stakeholder categories assist in determining the positions, activities and specialisations of SGI-SA stakeholders?
Section 5.2.3: What are the perceptions of SGI-SA stakeholders regarding their own organisational practice, communication and the efficiency of operations?

CHAPTER V: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This research aimed to investigate the perceptions of a unique cohort of stakeholders from a niche context regarding their positions, activities, specialisations, communication satisfaction and organisational procedures. Based on a qualitative analysis in Chapter IV of electronic survey responses, it can be concluded that: (a) stakeholder management holds much potential for determining the circumstances and people involved in developing games which intend to do more than solely entertain; (b) stakeholders at SGI-SA were employed to perform activities and hone specialisations outside of their given position in the interest area; and (c) these same stakeholders were relatively satisfied with communication practices at SGI-SA.

What does this chapter add?

- Chapter V is an executive summary of the main points from each chapter of the study and is a brief (yet comprehensive) overview of the entire dissertation;
- The final chapter of this dissertation provides a general overview of the significant contributions of the work done;
- The practical implications of the research findings are also discussed and presented as recommendations in the form of ideas and principles to follow for future research;
- Lingering question marks and loose ends are offered to generate interest for further investigation within the disciplines of computer science and general communication research for serious game stakeholders and process optimisation.

5.2 Addressing the research questions and aims

The research questions for the study related to three core issues relating to serious game stakeholders at an interest area such as SGI-SA, including:

- The categorisation of these stakeholders by way of a stakeholder management approach. A literature review was conducted in Chapter II of this study to address this research objective (see 5.2.1).

- Four functional categories of stakeholder positions, activities and specialisations were further developed in Chapter III following the literature study. These included "development", "publishing", "context-related" and "supplementary" categories for participant consideration. The methodology was adapted to examine perceptions according to these classifications in the administered online survey (see 5.2.2).
- A section of the same online survey also related to stakeholder satisfaction regarding operational and communication practices at SGI-SA, inspired largely by stakeholder diagnostic tools such as the Salience model and Power/Interest matrix (see 5.2.3).

The following sections discuss the results from both the literature review and empirical portions of the study as they relate to the research questions and subsequent aims.

5.2.1 To what extent can serious game stakeholders at SGI-SA be functionally categorised by way of a stakeholder management approach?

The functional categories devised in Chapter III of the study aided considerably in sorting the stakeholders into manageable sets. Furthermore, the approach applied considered both *issue-focused* and *organisational-focused* stakeholder management. This means that issues affecting an organisation (i.e. SGI-SA and NWU) and its relationships with other societal groups and companies (i.e. internal and external stakeholders thereof), as well as the organisation's *own* welfare were considered (Roloff, 2008:233). SGI-SA ultimately imploded in 2019. Communication and lack of apt stakeholder management could potentially be to blame for this.

Utilising this method allowed the researcher to sample the various stakeholders at the interest area by focusing mainly on organisational stakeholder management and the constituents involved. Furthermore, this technique—when used in conjunction with an issue-based lens—led the researcher to develop four functional categories for investigating stakeholder positions (relating to skill), activities (relating to familiarity) and specialisations (relating to the intersection of skill and familiarity). Finally, a purely issue-based stance for stakeholder management endorsed and supplemented the investigation of stakeholder stakes, power, communication satisfaction/impression, and information impression by way of complementary online survey questions.

The main statistical takeaways when profiling SGI-SA demographics are listed below:

- 35% of participants (N=7) fell within the ages of 26 to 35 years old and 30% of participants (N=6) fell within 18 to 25 years old.
- 80% of participants (N=16) were Caucasian in ethnicity.

- 60% of participants (N=12) identified as female.
- 45% of participants (N=9) held master's degrees at the time of survey completion.
- The average period spent with SGI-SA fell between 2 to 3 years.

The study did not merely aim to collect demographic data on the team at SGI-SA but sought to zoom in on the variables under investigation: positions, activities and specialisations. The overall outcomes are explained in the ensuing section.

5.2.2 In what ways can functional stakeholder categories assist in determining the positions, activities and specialisations of SGI-SA stakeholders?

The research methods gathered broad, interpersonal and fundamentally open-ended answers from participants to round off their stakeholder profile according to the four functional categories alluded to above: *development* (e.g. programming), *publishing* (e.g. branding), *supplemental* (e.g. licensing) and *context-bound* (e.g. research). More specifically, these classifications were wholly inspired by potential stakeholder positions, activities and specialisations as constituents at SGI-SA.

Generally speaking, the sum of SGI-SA stakeholders fell within all four of these functional categories (albeit with varying degrees), with the majority of them indicating involvement in positions and activities of the "context-related" category. This is to be expected, as the individuals under study were either employed by a HE institution, NWU, or were students registered there. The most prevalent variables within this category were scholarship (high level learning), educationalism (teaching and learning within a branch of education) and content expertise (specialisation within a given occupation).

This result is encouraging for a HE institution that wishes to focus on utilising novel practices for teaching and learning, as well as one which emphasises and supports research by academics. It does not, however, bode well for individuals who are expected to fulfil multifaceted positions at an institution where their work is distorted by a dual-, tri- or even quad-profession focus. How does one effectively craft serious games to completion when they are employed to lecture three classes a week and conduct sound academic research at the same time? The variable of time simply does not allow for this—and was one of the major concerns of the surveyed stakeholders.

To follow are the overall results for all three samples regarding their positions at SGI-SA. The following values were attributed to each response to generate a mean value per functional category: "Extremely unskilled" is regarded as a -2 value; "Unskilled" is a -1; "Average skill" is +0; "Skilled" is +1; and "Extremely skilled" is +2. Percentages were then generated using an

Artificial Intelligence-based algorithm which, by default, provides a spider chart with a combination of top five and bottom five variables based on the mean scores. This algorithm is used only if the number of variables exceeds ten. These are discussed to illustrate how the methodology employed could determine the positions, activities and specialisations of stakeholders at SGI-SA.

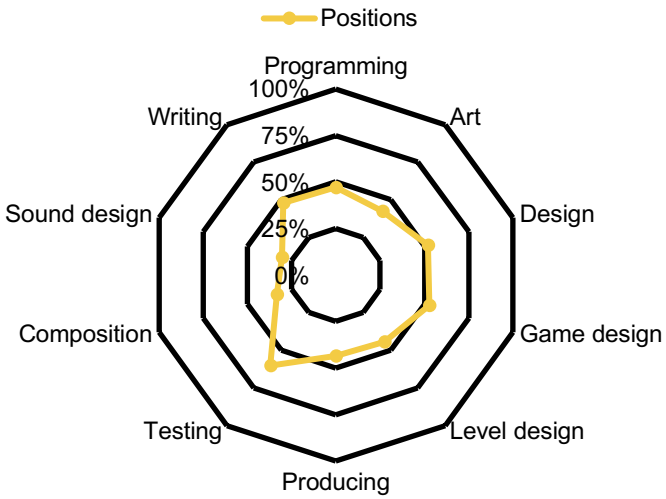


Figure 5-1: Stakeholder "development" positions at SGI-SA (2011-2019)

In terms of development positions, “tester” received the most positive proficiency perception with an average score of 3.61, resulting in an overall result of “average skill” for this position. Game testing is a form of quality control which serves to discover bugs (software anomalies or defects) through extensive evaluation of prototype game media. This is an unexpected result but does make sense upon further review. Such a primary function of game development can be performed by all sample groups (A, B and C), amplifying the spread of responses gathered across all three samples. Note, however, that none of the development positions received an average rating of “skilled” to “extremely skilled” for this functional category. For instance, at the other end of the spectrum, “composer” and “sound designer” received the lowest skills ratings (“extremely unskilled”) among participants, with average scores of 2 and 1.83, respectively.

Development positions in game design usually vary from niche to highly specialised, lowering the number of individuals who would have filled these positions, purely due to availability (see Annexure B). This leads to the mediocre skill perceptions by participants, as only a handful of them physically worked in the realms of art or production.

“Strongly disagree” is regarded as a -2 value; “Disagree” is a -1; “Neutral” is +0; “Agree” is +1; and “Strongly agree” is +2. Figure 5-2 represents the median scores for the “development” activities tested:

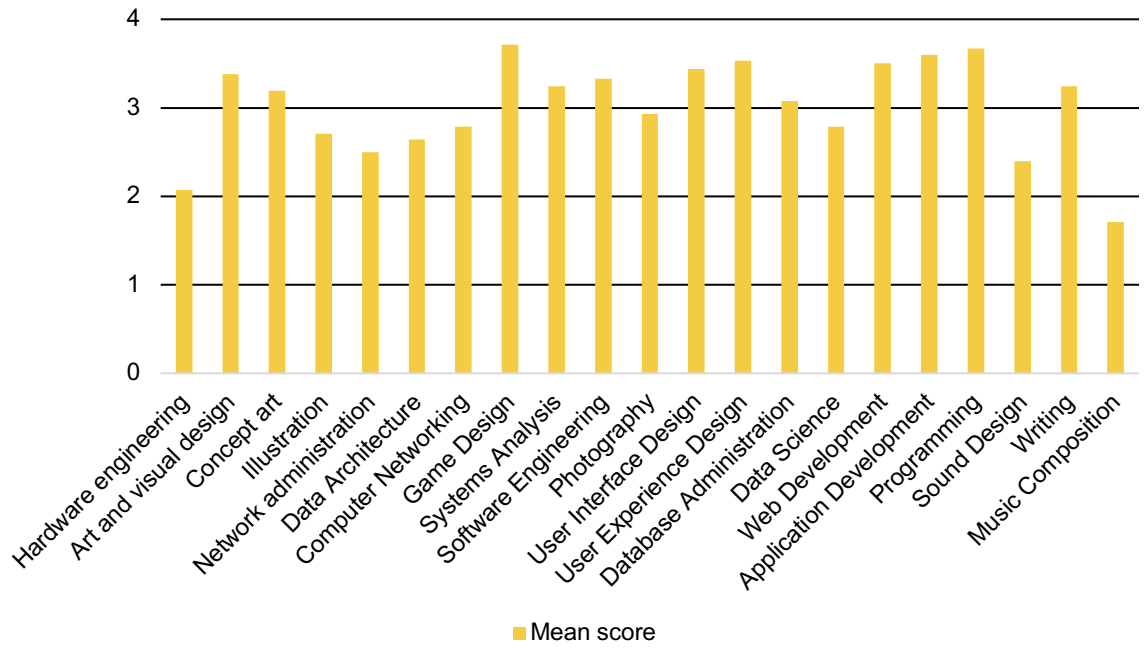


Figure 5-2: Average familiarity score per "development" activity at SGI-SA (2011-2019)

Higher skill perceptions for development activities were expected given the size of Sample A in relation to both B and C. However, this result for the entire sample population does once again denote the exclusivity of activities within this functional category. Familiarity, in this instance, does not necessarily determine competence in a given endeavour or even a group of activities. The term “familiarity” is used in this context to describe the extent to which a project stakeholder has been exposed to an enterprise, venture, job or exploit. To this end, stakeholders at SGI-SA were sufficiently familiar with the activities in serious game development—even if they reported low skill perception for them. From “web development” (75%) to “computer networking” (57.14%), these individuals had good levels of familiarity with general development activities. Moreover, decent awareness of specialised activities such as “art and visual design” (50%), “systems analysis” (52.94%) and “database administration” (53.84%) were recorded for the entire sample population. Finally, poor familiarity was documented regarding niche activities like “network administration” (21.43%), “sound design” (26.67%) and “music composition” (7.14%), as anticipated (see Annexure B).

The results among both “development” positions and activities also correlate with one another, as much of the prominence lies in technical areas of game design, programming and application development. Encouragingly, 88% of participants (N=15) ultimately felt they could employ their skills in the given “development” areas.

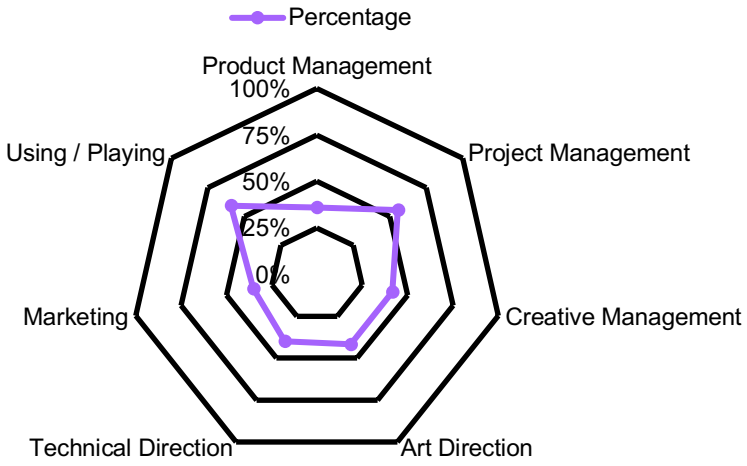


Figure 5-3: Stakeholder "publishing" skill perception per position at SGI-SA (2011-2019)

Average-to-low skill perception was recorded for ”publishing” positions at SGI-SA. Low skill acuity was reported for the positions of “marketer” (35.16%), “technical director” (39.81%), “creative manager” (41.67%) and “art director” (41.67%). These statistics mirror the expert nature of the roles described in the “development” section above. Not many stakeholders make up the directorate of any given organisation, so lower numbers of individuals will hold these positions, impacting on skill perception scores in the process. The variables here refer to managerial skills which involve both supervisory and subordinate upward and downward communication (Alam, 2016:74). Items here therefore suggest communication phenomena such as listening, openness, guidance and responsiveness.

Intriguingly, the positions of “user/player” (59.26%) and “project manager” (55.56%) received the highest percentages for skill perception per position. These positions would historically lie on opposite ends of the spectrum in terms of decision-making power and/or executive control. The position of game player would typically be at the bottom end of such a hierarchy, as these individuals do not play a direct role in determining design direction by a team like a project manager does. With this in mind, it would be interesting to see if such a high percentage of user/player skill perception relates to individuals playing games in their spare time (as a hobby) or if it can be attributed to them playing games at the serious game interest area that are in

development (for testing/review). Moreover, did the persons who rated themselves high in project management actively initiate, plan, execute, control and terminate work to achieve project goals within given constraints? Considering activity familiarity may provide answers to these deliberations.

Familiarity with the activities underlying these positions are examined below:

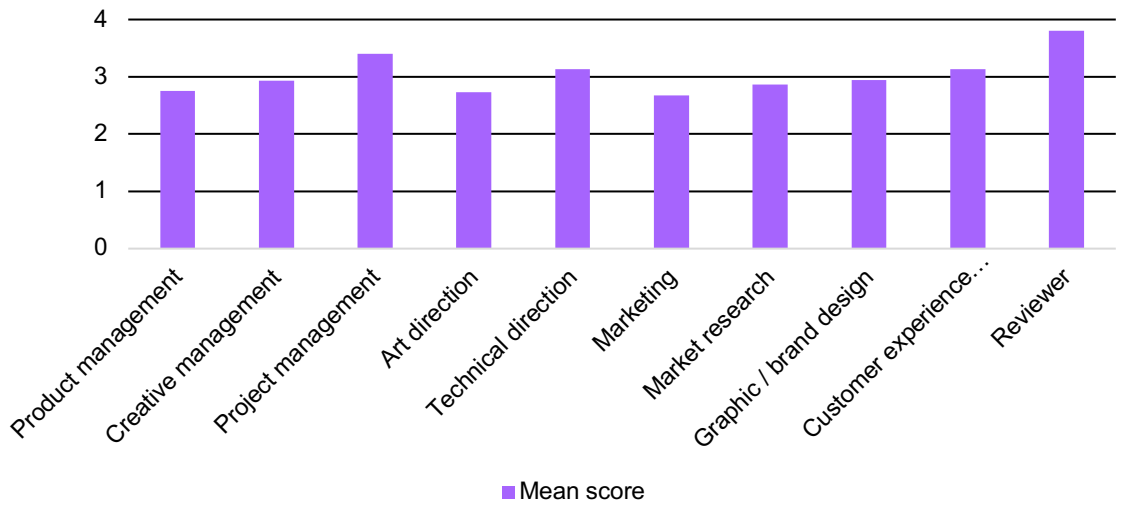


Figure 5-4: Average familiarity score per "publishing" activity at SGI-SA (2011-2019)

The collated data for activity familiarity parallels the position data considerably. “Reviewing” scored 76% (3.8 mean), meaning that the majority of participants selected “strongly agree” when questioned about their familiarity with this activity. Reviewing, in this context, refers to reviewing documentation (game design documents), meeting notes, websites, etc. “Project management” received the second highest familiarity percentage in this category with 68% (3.4 mean). This is logically congruent with how a team of individuals are exposed to a manager and/or team leader when working as project stakeholders. It is also important to note that none of the activities listed in this category received lower than 50% or “neutral” familiarity scores. An inference of this is that managers at SGI-SA created value for stakeholders by appreciating them and keeping their interests in mind (Freeman & McVea, 2001:207). Reassuringly, 76% of participants (N=13) felt they could employ their skills in the given “publishing” areas at SGI-SA.

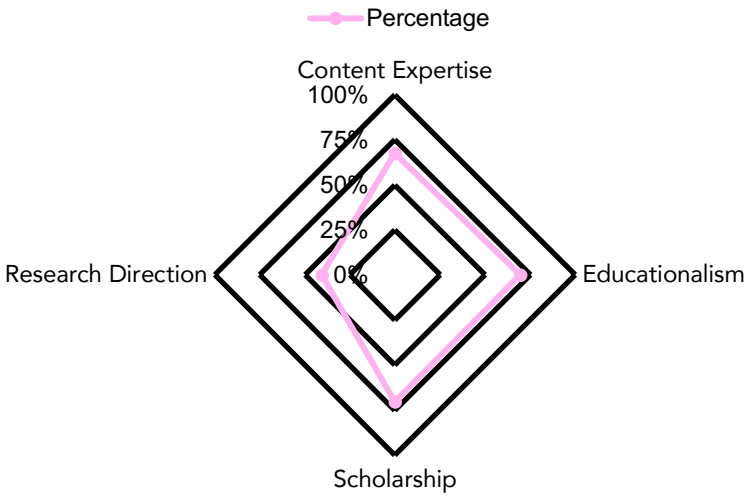


Figure 5-5: Stakeholder "context-related" skill perception per position at SGI-SA (2011-2019)

“Context-related” positions received the highest skills perception ratings out of all of the functional categories tested. “Scholar” received 70.37% and “Educationalist” received a score of 69.44%. “Content expert” is arguably the most important position for this functional category, as it contributes pertinently to the modification and flow of subject material from academic to game developer. It is reassuring, then, that such a focused position received a 67.59% skill rating. Not all stakeholders interact with or take up the mantle of content expert during game development at an HE institution; so, this result is higher than anticipated.

This could be interpreted in one of two ways—or both. The first is negative, as it means that stakeholders at SGI-SA were expected to fulfil the role of content expert even when it was not their actual occupation. On the other hand, the high skill perception in this position could be positive, as stakeholders felt like they were competent or worthy of the moniker “content expert” in their specific vocation. Expectedly, only 40.74% of participants reported adept skill for the position of “Research director”. This is a senior supervisory role that requires extensive years of experience to effectively undertake.

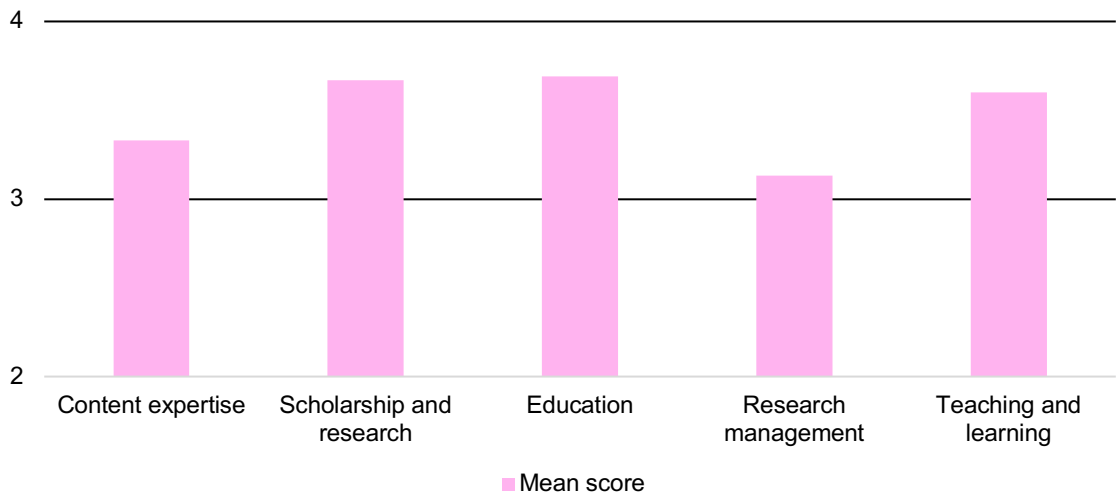


Figure 5-6: Average familiarity score per "context-related" activity at SGI-SA (2011-2019)

Familiarity with “context-related” activities tells a somewhat different story than that of the positions. Reasonably elevated awareness of these activities was reported by participants with “education” (73.75%), “scholarship and research” (73.33%) and “teaching and learning” (72%) scoring high. Interestingly, the “content expertise” familiarity score of 66.67% aligns with the skill perception score of 67.59% discussed above. This parallel is not universal, however, as the activity “research management” received 62.67% and the position of “research director” only recorded 40.74% for skill. Exactly like the “development” functional category, 88% of participants (N=15) felt they could employ their skills in the given “context-related” areas at SGI-SA.

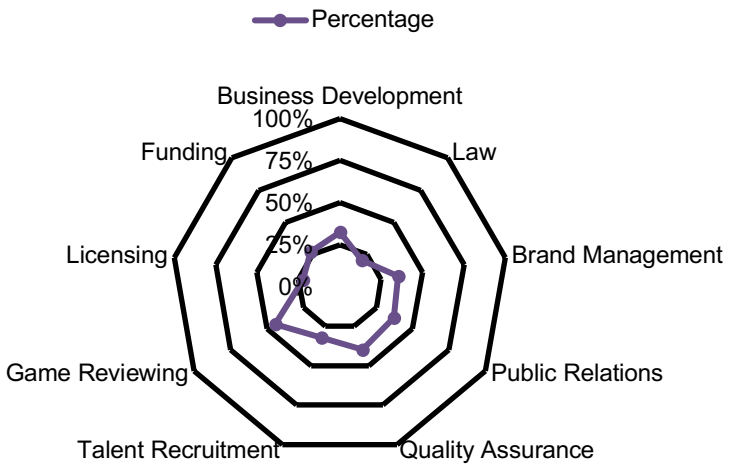


Figure 5-7: Stakeholder "supplementary" skill perception per position at SGI-SA (2011-2019)

Expectedly, “supplementary” positions received the lowest skills perception ratings out of the functional categories examined. This is wholly attributed to the need for the positions listed in this category. These positions can essentially be outsourced or hired as consultants should the need arise. Positions such as talent recruiter typically fall out of the scope of a small, independent game studio; and the same is true for an interest area with limited capacity such as SGI-SA. “Game reviewer” scored the highest with 44.44% and “quality assurance manager” received the second highest skill perception with 39.81%. Game reviewers and critics are usually external stakeholders who do not want to infuse bias in their critiques of media—resulting in them remaining independent during the review process.

“Extremely unskilled” perceptions were recorded for the following positions: “lawyer” (20.37%), “licensor” (22.22%) and “funding body” (26.85%). This result can be attributed to the fact that these vocations are highly specialised and somewhat atypical for a game development studio. Persons in these positions are consulted infrequently during the design cycle.

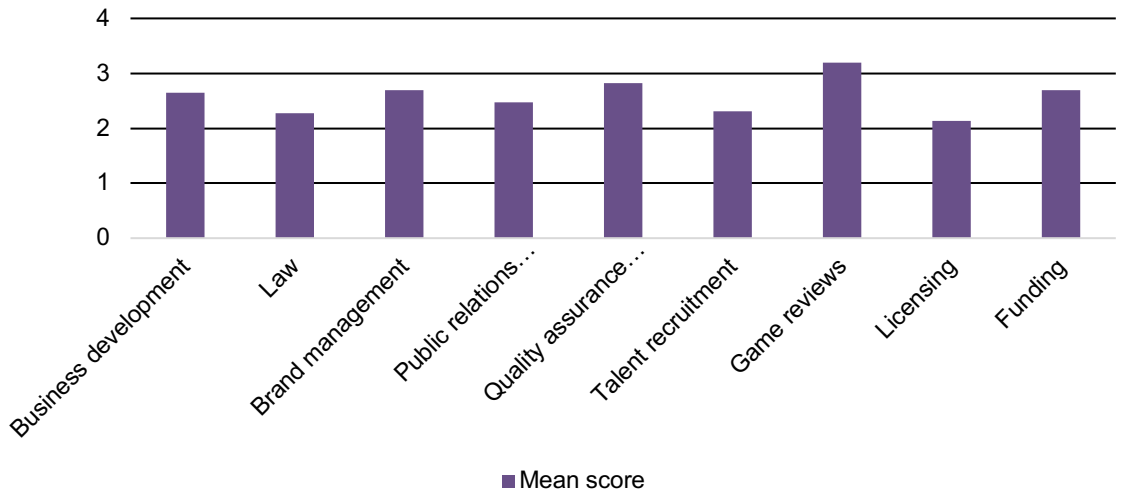


Figure 5-8: Average familiarity score per "supplementary" category at SGI-SA (2011-2019)

Fifty-three percent (53%) of participants (N=9) felt they could employ their skills in the given “supplementary” areas at SGI-SA. Familiarity with the underlying activities scored higher, on average, than the perception of skill relating to positions in this category.

The meta-analysis of the functional category data reveals that the majority of individuals filled positions as “development” and “context-related” stakeholders at SGI-SA. Moreover, most of the responses gathered indicated high skill perceptions for activities related to these highly specialised, transitory stakeholder positions as well.

5.2.3 What are the perceptions of SGI-SA stakeholders regarding their own organisational practice, communication and the efficiency of operations?

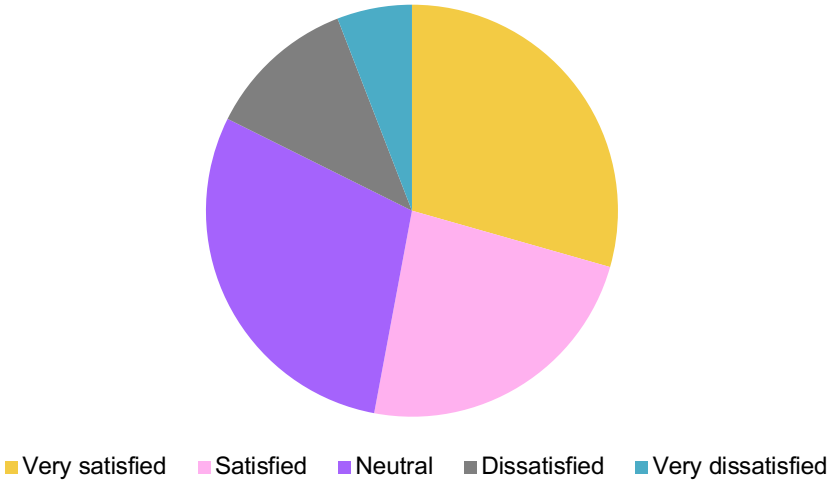


Figure 5-9: Communication satisfaction at SGI-SA

Encouragingly, both "satisfied" (23.53%) and "very satisfied" (29.415) received the bulk of responses regarding communication satisfaction at SGI-SA. This result indicates approval concerning organisational communication on behalf of these stakeholders. Neutrality was, however, expressed by 29.41% of participants (N=5). The communication dimension addressed here is that of the *organisational communication context*, and relates less to interpersonal and group communications contexts. This measure, then, specifically focuses on the: (a) "Corporate information dimension", including organisational change, financial standing, achievements and failures; (b) "Communication climate dimension", such as motivation, identification with the organisation, and attitudes towards communication; and (c) "Media quality", comprising meetings, written directives and quantity of information (Downs & Hazen, 1977b:73). Corporate information, thus, refers to information exchanged in the broadest sense, i.e. overall policies and goals of an organisation. Generally, participants were content with the level of communication efficacy amid stakeholders at SGI-SA.

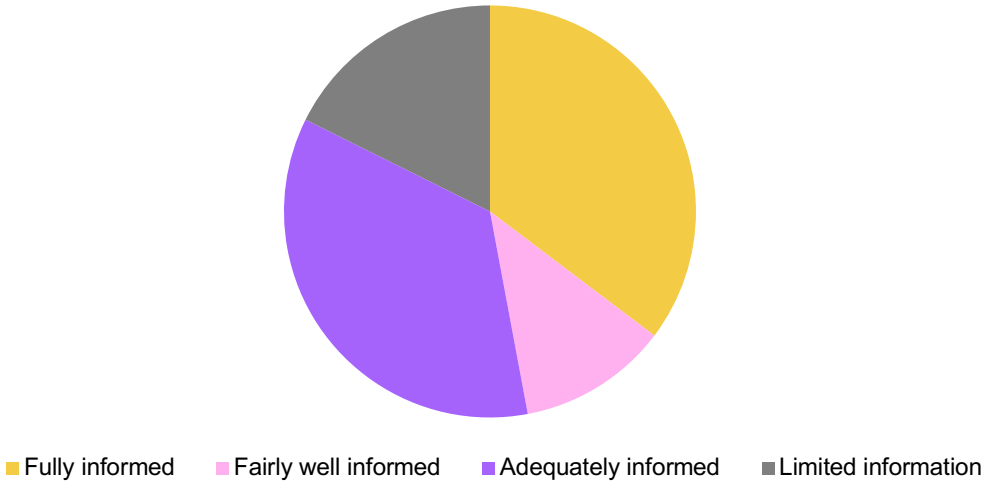


Figure 5-10: Communication impression at SGI-SA

The neutral-to-good trend continues with the impression stakeholders had of communication practices at SGI-SA. The lion's share of responses is shared between "fully informed" and "adequately informed" at 35.29% (N=6). This impression was made through verbal messages (speech), as well as nonverbal communication (actions, dress, etc.) by stakeholders at the serious game interest area. Impression management by corporate entities and the social psychology of individuals endeavouring to present themselves in a certain way consequently come to the fore. Hooghiemstra (2000:60) maintains that project stakeholders may not always be mindful of the impressions they convey, but a certain degree of "strategic behaviour" can usually be anticipated. For SGI-SA stakeholders, the popular opinion was that intelligence shared at the interest area was satisfactory. Ultimately, impression management has consequences not only for the individual in an organisation (personal agenda), but the institution as a whole (reputation, addressing legitimacy threats and financial standing) (Hooghiemstra, 2000:60). The data confirms that stakeholders from 2011 to 2019 had a respectable impression of communications at SGI-SA.

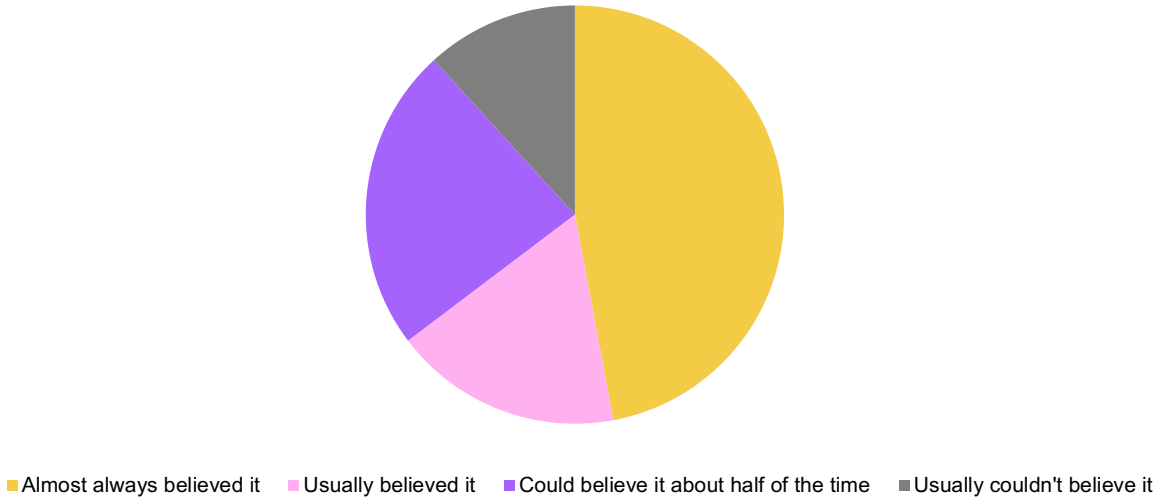


Figure 5-11: Information impression at SGI-SA

Nearly half (47.06%) of the participants felt they could “almost always” believe information disseminated and spread at SGI-SA. Less than a quarter (23.53%; N=4), however, felt they could only believe information about “half of the time”. The concept of “organisational integration” is underscored by this information impression result. To Alam (2016:74), this refers to the extent to which stakeholders receive information in and about their immediate work environment. It can therefore be stated that SGI-SA stakeholders were satisfied with information received regarding job requirements, departmental plans and personnel news.

5.3 Conclusions

From the analysis it was found that:

- Stakeholders at SGI-SA mostly held positions in the development and context-related functional categories. Positions for publishing and supplementary positions were relatively lower in terms of frequency and skill perception.
- Skill perception for all four functional categories were generally lower than familiarity rates for both positions and activities in these classifications. Moreover, skill perception does not denote competence in these positions/activities. The same goes for familiarity with them.
- Activity familiarity was highest for context-related activities such as education or scholarship. This was mainly due to the ties between the serious game interest area and a HE institution, i.e. NWU. Stakeholders were, furthermore, least familiar with activities listed in the supplementary category.

- Stakeholders were satisfied with organisational practice, communication and efficiency of operations at SGI-SA.
- Stakeholders at SGI-SA had a good impression of both communication and could usually-to-always believe information at the interest area.

5.4 Delimitation of the study

The present study had the following delimitations:

- The study was limited to the variables under investigation, namely: communication, positions, activities and specialisations.
- It was confined to a single context and population group—stakeholders from the Serious Games Institute of South Africa (SGI-SA). The sample size was thus limited to 18 people.
- The content analysis was inherently reductive, especially when dealing with complex responses (texts) in the survey (The Writing Studio, 2019a).
- The study itself was also limited in its design, method, measuring devices and statistical techniques applied. As Silverman (2010:10) argues, qualitative approaches to research often neglect to address contextual sensitivities and tend to emphasise meanings or experiences.

5.5 Suggestions for future research

The following suggestions with reference to the aforementioned limitations are:

- Further research in the realm of serious game design stakeholders at HE interest areas should account for larger sample sizes and should compare data between various groups to discover commonalities and to track trends.
- The stakeholder diagnostic tools identified in Chapter II of this study could be used as measuring devices for practical stakeholder investigation.
- Practitioners in the field should consider conducting semi-structured interviews with stakeholders at a given serious game interest area. These interviews would involve questions that are predetermined by the researcher but would be subject to change, based on the researcher's perception of what is most appropriate at the time (Van Teijlingen, 2014:17). These interview questions need to be sorted and categorised for each individual stakeholder and should be tailored for every participant according to how they identified themselves in the surveys (the method employed in this study)—as

certain questions simply do not apply to each type of stakeholder. A breakdown of sample questions can be found in Annexure D.

- Future research needs to develop intervention strategies to enhance stakeholder satisfaction, communication, position alignment/concretisation, activity restructuring and stratification, as well as specialisation integration.

5.6 Study implications

The implications of the study lie squarely in the realms of corporate communication, computer science and information systems and education. The basic communication research detailed how stakeholders within a niche serious game interest area were employed within certain positions but had to adapt their specialisations in order to perform activities unrelated to their given vocation. This applied a degree of pressure on these stakeholders to split their focus between educational and developmental work.

A large share of stakeholders resigned from SGI-SA in a short period of time (2015-2016), indicating there were problems at the interest area. SGI-SA is now defunct, and this research has shown that circumstances could have been better if communication was a priority.

Likewise, the results of this research can aid in serious game development teams:

a) **Understanding and taking charge of serious game activities:** Stakeholders at niche development studios should know exactly what their job profile entails. Moreover, it may be beneficial for these individuals to have a singular focus, and not have to diverge their energies into both educational and development endeavours.
b) **Identifying the appropriate roles and stakeholders to design/develop serious games more effectively:** The number of stakeholders at SGI-SA seemed adequate for game design during the early years (2011 to 2016), but not for the latter years (2017 to 2019). Individuals working there during the later years would have required a convoluted blend of competencies to perform their daily duties. A team of four individuals simply cannot generate outputs like ten or eleven individuals can. A clear communication plan should be set out for individuals to generate serious game media more effectively.
c) **Determining which events fall within their control and which do not:** Supplementary activities and positions largely fell outside of the remit of SGI-SA stakeholders; denoting that procedures and events within this functional category are not fundamental to producing serious games at a HE institution. On the other hand, just because these activities were not present does not mean they were not needed. It

could be that had they been there the situation would have been better. Moreover, management functions should be limited to a small number of stakeholders to avoid power disputes.

d) **Recognising how stakeholders can contribute to functional areas within serious game interest areas:** Stakeholders at SGI-SA negotiated with and manoeuvred between the four functional categories during their time working at the interest area with some success. Ideally, the functional categories could be used as job guidelines to ensure stakeholders are not expected to do so, thereby impacting on their time and energy investment in their appropriate sphere of work.

e) **Discover novel plans to use in future SG contexts:** An intelligent system should be designed that incorporates functional categories to generate a taxonomy of serious game design stakeholders. This would render such interest groups not only relevant, but sustainable as well. The research presented in this dissertation, nevertheless, offers a method for other researchers to employ to identify gaps in communication strategies and operations at SG areas of interest.

5.7 Recommendations

On the basis of the research conducted, following are a few recommendations for stakeholders involved in serious game production at HE institutions:

- It would be worthwhile for HE institutions to systematically plan, research and mature their blueprints for serious game interest areas before hiring stakeholders to produce content and perform research on these outputs. This will ensure the chances of failure are reduced. Moreover, all stakeholders at the institution should also be educated regarding this venture and the constituents who will be involved.
- Stakeholders should be sufficiently trained and skilled enough to fill clearly defined positions at the interest area. These positions should not have more than a single focus.
- The stakeholder positions at the interest area should align exclusively with the activities performed by persons hired to do so. Stakeholders should not be expected to perform duties outside of their dispatch. This was a significant factor in negative responses given by participants.
- Specialisations can be cultivated and thrive if the correct balance is struck between stakeholder positions and their activities (tasks).

5.8 Conclusion

Kanode and Haddad (2009:260) reiterate how unique video game development is in terms of uniting the work of teams from various disciplines (i.e. acting, programming, art and music). These individuals collaborate in order to engross users with engaging gameplay. Unfortunately, only 16% of these projects are realised within their given time and budget (Kanode & Haddad, 2009:260). This statistic is even more discouraging when considering software download frequencies and how low game completion rates are.

Stemler (2001:146) reminds us that content analysis can be a potent data reduction technique if "used properly". It allows one to condense and compress considerable text into manageable categories based on rules defined for proper coding. This study successfully employed content analysis as a research technique to investigate stakeholder perceptions from a serious game interest area in the unique context of Vanderbijlpark, South Africa. Stakeholders from this milieu reported positive experiences working and communicating as part of a HE institution, namely North-West University. One significant hindrance to employee approval was the muddled focus for stakeholders to extend their positions into unrelated activities and the expectation for them to become specialised in more than one area of expertise.

In terms of validity and reliability of the research: rich, verbatim participant accounts were described to support inferences made in Chapter IV. Careful record keeping, additionally, demonstrated a clear evaluation trail and helped ensure that data interpretations were transparent, and more notably, consistent. Moreover, the assortment of perspectives from the sample were represented, establishing a comparison case where differences and similarities between lived experiences could be brought to light. Finally, source triangulation—through the use of a single method to compare participant perspectives—was achieved by applying the same method to the three unique sample groups.

As with any formal scientific study, this research followed ethical norms to promote the aims of the research, ensure participant comfort and avoid error. Participants were provided with: (i) a description of the study particulars; (ii) privacy statement; (iii) an indication of the research goals; (iv) researcher details; (v) procedures followed to capture responses; (vi) withdrawal information; and (vii) various response options to allow for streamlined response procedures.

In closing, if serious games continue to be considered a potential bridge between the gap between university and industry/practice, the complexity of serious game design at such interest areas needs to be addressed, unpacked and expounded to ensure this form of media is effectively produced time and time again. More is now known about what the requirements

are in terms of serious game stakeholder positions, activities and specialisations for efficient design in the HE sector; but more work is yet to be done in this area to generate more generalisable findings for local and international interest areas relating to serious games and the people who make them. Finally, a practitioner approach should be applied in all future research to contribute to a framework capable of guiding future communities of practice.

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ANNEXURE A: SURVEY QUESTIONS

Cover letter

You are hereby invited to participate in a research study conducted by Mr LR Bunt at the School of Computer Science and Information Systems at NWU, Vanderbijlpark Campus.

Title of the Research Study: "Investigating perceptions of stakeholders' positions, activities and specialisations at a serious game interest area."

Principal Investigator/s/researcher: MR LR Bunt

Supervisor/s: DR C Venter & MR JJ Greeff

Brief Introduction and Purpose of the Study:

This study intends to profile stakeholders typically involved in and affected by development of serious games at Higher Education (HE) institutions. It explores the positions, activities and specialisations necessary for effective serious game design, as well as the pitfalls and danger signs that can be used to prevent undesirable outcomes. For this purpose, a case study of a former serious game research interest group: The Serious Games Institute of South Africa (SGI-SA) will be conducted; where stakeholders are questioned to gather their perceptions, thoughts and feelings regarding the operational nature of the interest area in question. As a specific case study, the North-West University will be used as a relevant example due to the amount of serious game work that has been done and continues to be done in this context. Despite multiple prevailing serious game design frameworks, no existing taxonomic systems focus on the individuals who are impacted by and have an influence on serious game design projects. Such a gap necessitates the classification of all interest groups. No formal classifications currently exist for persons involved in developing games intended to do more than solely entertain—especially in the HE space. A practitioner approach is being applied to understand and better manage the relationships of the various stakeholder groups involved in serious game design interest areas.

Outline of the Procedures:

The participant has the responsibility to answer the questionnaire honestly and accurately; and to complete the entirety of the survey upon submission of his/her responses. The survey should take no longer than 30-45 minutes to complete, and pertains to the nature and functions of SGI-SA from 2011-2019.

Important notes regarding the survey:

- A survey response may be excluded if the questionnaire is incomplete or if the majority of responses are incomprehensible

- The survey is being disseminated electronically for the convenience of all participants to complete in their own time
- A follow-up consultation with the participants is foreseen at this time and will take place telephonically or in-person; at the request of the participant
- ONLY stakeholders identified as being associated with SGI-SA between 2011 and 2018 may complete the survey

Risks or Discomforts to the Participant:

No foreseeable risks or discomforts to participants are expected.

Benefits:

The results of this research can aid in serious game development teams: (i) understanding and taking charge of all serious game activities; (ii) identifying the appropriate roles and stakeholders to design/develop serious games more effectively; (iii) determining which events fall within their control and which do not; (iv) recognising how stakeholders can contribute to functional areas within serious game interest areas; and (v) discover novel plans to use in future serious game contexts. Furthermore, the creation of a stakeholder taxonomy and related professional practice guidelines will benefit future serious game interest areas as "lessons learned".

Reason/s why the participant may be withdrawn from the study:

A participant can leave the research study at any time. When withdrawing from the study, the participant should let the researcher know that he/she wishes to withdraw. A participant may provide the researcher with the reason(s) for leaving the study, but is not required to provide their reason.

Remuneration:

Participants in this study will NOT receive any form of monetary and/or academic remuneration.

Confidentiality:

The researcher will do the following to maintain participant confidentiality and will protect subjects' privacy by: (a) Using study codes on data documents (e.g. completed questionnaire) instead of recording identifying information and will keep a separate document that links the study code to subjects' identifying information; (b) Encrypting identifiable data; (c) Removing face sheets containing identifiers (e.g. names and addresses) from survey instruments containing data after receiving from study participants; (d) Properly disposing of, destroying, or deleting study data / documents; (e) Limiting access to identifiable information; (f) Securely storing data documents within locked locations; and/or Assigning of security codes to computerised records.

Persons to contact in the event of any problems or queries:

Please contact the researcher telephonically at 016 910 3253 should the need arise. Alternatively, email Lance.Bunt@nwu.ac.za.

Potential participants can rest assured that participation in this study is completely voluntary and all identifiable stakeholders involved in operations at the SGI-SA research interest area will be asked to participate. It is not required that ALL of these participants consent to having their responses used in this research. So please do not feel pressured or forced to comply with this form. You have the choice to say "no, thank you".

1) Email Address…*
2) I have read this form in detail. I understand the purpose and nature of this study and I am participating voluntarily. I understand that I can withdraw from the study at any time, without any penalty or consequences.*
3) I agree to take part in this study and I hereby grant permission for the data generated from this research to be used in the researcher's publications on this topic. *
4) I grant permission under the following conditions…*
5) I grant permission for the research to be recorded and saved for purpose of review by the researcher, supervisor / principal investigator, and ethics committee.*
6) I grant permission for the research recordings to be used in presentations or documentation of this study.*
7) I would like to be sent a copy of the dissertation when it is complete.*

SECTION 1: Demographic profile

In determining what communication at SGI-SA entailed, the researcher must identify and categorise the stakeholders thereof in terms of: (1) Demographic Profile, (2) Positions, (3) Activities, (4) Specialisations, and (5) Influence and Stakes. This will begin with sketching a demographic profile in the proceeding Section:

1.1 Name

1.2 Surname

1.3 Age

1.4 Ethnicity

1.5 Gender

1.6 Highest Qualification

1.7 I was involved with SGI-SA from...(if unsure of month and/or day, please select "Jan/01/XXXX")

1.8 I was involved with SGI-SA to...(if unsure of month and/or day, please select "Jan/01/XXXX")

SECTION 2: Stakeholder positions

In determining what communication at SGI-SA entailed, the researcher must identify and categorise the stakeholders thereof in terms of: (1) Demographic Profile (2) Positions, (3) Activities, (4) Specialisations, and (5) Influence and Stakes. The proceeding Section will look at Stakeholder Positions:

2.1 During my involvement with SGI-SA, my official job title was...*

2.2. My official job description at SGI-SA was...*

2.3 My operational outcomes at SGI-SA were to...*

2.4 I fulfilled the following "development" position(s) during my time at SGI-SA (select as many that apply to you) and my perceived skill level for each is as follows:

Table A-1: Development position skill index

	N/A	Extremely unskilled	Unskilled	Average skill	Skilled	Extremely skilled
Programmer						
Artist						
Designer						
Game designer						
Level designer						
Producer						
Tester						
Composer						
Sound designer						
Writer						

2.5 I fulfilled the following "publishing" position(s) during my time at SGI-SA (select as many that apply to you) and my perceived skill level for each is as follows:

Table A-2: Publishing position skill index

	N/A	Extremely unskilled	Unskilled	Average skill	Skilled	Extremely skilled
Product manager						
Project manager						
Creative manager						
Art director						
Technical director						
Marketer						
User/player						

2.6 I fulfilled the following "context-related" position(s) during my time working at SGI-SA (select as many that apply to you) and my perceived skill level for each is as follows:

Table A-3: Context-related position skill index

	N/A	Extremely unskilled	Unskilled	Average skill	Skilled	Extremely skilled
Content expert						
Educationalist						
Scholar						
Research director						

2.7 I fulfilled the following "supplementary" position(s) during my time working at SGI-SA (select as many that apply to you) and my perceived skill level for each is as follows:

Table A-4: Supplementary position skill index

	N/A	Extremely unskilled	Unskilled	Average skill	Skilled	Extremely skilled
Business development staff						
Lawyer						
Brand manager						
PR manager						
QA manager						
Talent recruiter						
Game reviewer						
Licensor						
Funding body						

SECTION 3: Activities & specialisations

In determining what communication at SGI-SA entailed, the researcher must identify and categorise the stakeholders thereof in terms of: (1) Demographic Profile (2) Positions, (3) Activities, (4) Specialisations, and (5) Influence and Stakes. The proceeding Section will look at Stakeholder Activities and Specialisations:

3.1 What, precisely, were you expected to create/manage/develop or implement as part of your responsibilities at SGI-SA?

3.2 The following serious games were produced during my time involved with SGI-SA…*

3.3 I would consider myself familiar with the "development" activities of:

Table A-5: Development activity familiarity index

	N/A	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Hardware engineering						
Art and visual design						
Concept art						
Illustration						
Network administration						
Data architecture						
Computer networking						
Game design						
Systems analysis						
Software engineering						
Photography						
User interface design						

User experience design						
Database administration						
Data science						
Web development						
Application development						
Programming						
Sound design						
Writing						
Music composition						

3.3.1 How would you describe your field of expertise in relation to these "development" activities?

3.3.2 I was able to employ my skills in the given "development" area(s) at SGI-SA…(Yes / No / Other)

3.4 I would consider myself familiar with the "publishing" activities of:

Table A-6: Publishing activity familiarity index

	N/A	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Product management						
Creative management						
Project management						
Art direction						
Technical direction						
Marketing						
Market research						
Graphic/brand design						
Customer experience design						
Reviewer						

3.4.1 How would you describe your field of expertise in relation to these "publishing" activities?

3.4.2 I was able to employ my skills in the given "publishing" area(s) at SGI-SA…(Yes / No / Other)

3.5 I would consider myself familiar with the "context-related" activities of:

Table A-7: Context-related activity familiarity index

	N/A	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Content expertise						
Scholarship and research						
Education						
Research management						
Teaching and learning						

3.5.1 How would you describe your field of expertise in relation to these "context-related" activities?

3.5.2 I was able to employ my skills in the given "context-related" area(s) at SGI-SA…(Yes / No / Other)

3.6 I would consider myself familiar with the "supplemental" activities of:

Table A-8: Supplementary activity familiarity index

	N/A	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Business development						
Law						
Brand management						
PR management						
QA management						
Talent recruitment						
Game reviews						
Licensing						
Funding						

3.6.1 How would you describe your field of expertise in relation to these "supplemental" activities?

3.6.2 I was able to employ my skills in the given "supplemental" area(s) at SGI-SA…(Yes / No / Other)

3.7 Did stakeholders at SGI-SA have the necessary tools and physical resources they needed to work effectively? Provide reason(s) for your answer.

3.8 Did stakeholders have the equipment, supplies, job aids, service standards and protocols, and record keeping instruments they needed at SGI-SA? Provide reasons for your answer.

3.9 How reliable and up-to-date were the information technology and communication systems at SGI-SA? Please elaborate.

3.10 Did the mission of SGI-SA and various aspects of being a stakeholder for the interest area (SGI-SA) motivate you to perform well?

Never	Occasionally	Sometimes	Most of the time	All of the time

3.11 Did the environment of SGI-SA motivate you to perform well?

Never	Occasionally	Sometimes	Most of the time	All of the time

3.12 Overall, how satisfied were you with communications at SGI-SA?

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied

3.13 Which best describes your impression of communications at SGI-SA?

Didn't tell us much	Limited information	Adequately informed	Fairly well informed	Fully informed

3.14 How did you feel about the information you received at SGI-SA?

Never believed it	Usually couldn't believe it	Believed it half of the time	Could usually believe it	Almost always believed it

3.15 How well do you feel you knew SGI-SA (as a serious game interest area)?

Knowing about SGI-SA wasn't important to me	I knew almost nothing about SGI-SA	I knew just a little about SGI-SA	I knew a fair amount about SGI-SA	I knew SGI-SA very well

3.16 In your own opinion, if the project team at SGI-SA could have accomplished just one thing, what would it have been?

SECTION 4: Influences and stakes

In determining what communication at SGI-SA entailed, the researcher must identify and categorise the stakeholders thereof in terms of: (1) Demographic Profile (2) Positions, (3) Activities, (4) Specialisations, and (5) Influence and Stakes. The proceeding Section will look at stakeholder influences and stakes:

4.1 Did you approve the funding at SGI-SA? (Yes / No / Other)

4.2 Did you set the vision/goals at SGI-SA? (Yes / No / Other)

4.3 Did you approve changes which could impact costs at SGI-SA? (Yes / No / Other)

4.4 Did you approve changes impacting scheduling at SGI-SA? (Yes / No / Other)

4.5 Could you have stopped projects or initiatives at SGI-SA? (Yes / No / Other)

4.6 Could you have benefited the most from operations at SGI-SA? (Yes / No / Other)

SECTION 5: Additional comments

5. Please feel free to communicate any thoughts, feelings or comments about SGI-SA below:*

***End of survey

ANNEXURE B: DATA AND RESULTS

Table B-1: Sample A - Job title, description and outcomes

Respondent	Official job title	Job description	Operational outcomes
1	Manager Serious Game Designer Business Developer Project Co-Ordinator	Provided input on decisions vital to the growth and direction of the Institute. Worked with tools such as UDK, Unity, Blender, PhotoShop and technology such as the XSens motion capture suit to create serious games. Finding new projects and researching/acquiring new technology that would help establish SGI-SA as a design hub in the Vaal Triangle. Engage with potential investors and clients, draft quotes and project manage a team of developers and designers.	Acquire new business and partnerships Acquire new and latest technology Get SGI on the gaming radar Create serious games Publish serious games Research Manage SGI-SA Manage projects through the development lifecycle
2	Programmer	Full Member of the game development team as a C# programmer.	Program mini games using models and/or resources from SGI-SA artists and designers.
3	Research and Teaching Assistant (2012 - 2014) Junior Lecturer (2014 - 2016) Lecturer (2016)	Software developer	Provide research output regarding serious games Develop electronic serious games
4	Manager of SGI-SA	Manage members of SGI-SA	To build a business unit that leverages the potential of talented students and industry professionals to produce serious games for corporate, higher education and

Respondent	Official job title	Job description	Operational outcomes
			private customers, while systematically building an SG research portfolio for the unit. During the latter period of my management, the focus shifted more toward becoming a research-driven entity under the TELIT-SA banner.
5	Lecturer	Lecturer for NWU, researcher and game developer	Lecturer: 1st year part-time Mathematics: 3rd year Artificial Intelligence Honours level lecturer: Artificial Intelligence Research: *OcuLift* Developer: Assist App Factory SGI projects: *OcuLift* and *StoryTimes* Marketing: Campus Open days, Sasol TechnoX, etc. Assist in any SGI-SA related design or development
6	Artwork Coordinator However, my involvement in SGI-SA was by choice and limited.	Responsible for the coordination of art and design by removing all debris from the river of creativity that provides the telepresence SGI-SA's gamers hunger for.	I was only directly involved in the *Mandela27* project, and provided feedback/ advice on other projects from time to time.
7	Executive Dean	Make significant decisions regarding funding and direction of SGI-SA	Establish, equip and empower SGI-SA
8	Lecturer / Researcher	Lecture at NWU and undertake research for the School of Computing Science	Designing / developing serious games and determining users' perception of them

Respondent	Official job title	Job description	Operational outcomes
			and/or their effectiveness.
9	Lecturer Programmer Manager, SGI-SA	Ill defined. The general idea was to bring SGI-SA back from the dead and perform all tasks relating to project management, publishing, securing of finance etc. I also inherited a number of projects that were incomplete where all staff that worked on them had departed before I began. As such, the work that needed to be done was fairly ad hoc as things came out of the woodwork.	Mainly the creation of serious games and successfully bringing them to the (internal) market.
10	Administration Officer	Administration duties Marketing designs Project management Customer communication Game development Game asset generation Research	Creating and updating of SGI-SA webpage. Designing market material for SGI-SA. Managing projects: SGI-SA conference in 2014 / TIA projects (3 projects), Facebook pages, Twitter feeds. Communication with customers during projects Develop game assets using various programs (Unity, Unreal, Flash, 3d Studio Max and Blender).

Table B-2: Sample A - Stakeholder activities and specialisations

**Note to reader: Certain names, pronouns and identifying characteristics were removed from responses to ensure anonymity and safeguard the ethical underpinnings of the study.*

Response 1	"A bit of all - manage game development throughout the lifecycle, acquire new business/tech, promote SGI-SA, serious game design, story boarding, graphic design, sound creation..."
Response 2	"To create/develop mini games that will be implemented in serious games. Assist with programming (C# using unity)."
Response 3	"At SGI-SA, my main focus was software development. Examples of projects I worked on include: Three projects that received TIA funding (1. *StoryTimes*, 2. *Oculift* - Forklift simulator using virtual reality / Oculus Rift, 3. Interactive Multimedia Study Guide for NWU subject NUTB121). I was part of the development team that did the programming for these projects. Technologies I used included Adobe Creative Cloud Suite, HTML5 (Javascript) and ActionScript, Blender3D, Unity3D and C#. I worked as part of a team on the design, development and testing of *Surviving the Vaal with VUVU*, which resulted in three research outputs. I also acted as one of the content experts for *Surviving the Vaal with VUVU*. This game focused on teaching statistics principles to NWU students My Masters was also based on research on the StoryTimes serious game, and focused on HCI principles. Apart from SGI work, I also lectured various statistics and computer science subjects at NWU. Because we were a relatively small team at SGI-SA, I also had to perform other duties, such as communicating with clients, working on graphics and sound editing."
Response 4	"My role was to manage the entire high-level serious game production pipeline, comprising: (a) sourcing clients and projects; (b) managing the development and development team; (c) managing budgets and resources; (d) ensuring that all IPR terms were met; (e) delivery to the client. I was also fully part of the team as game and level designer and was mostly the contact person with the relevant subject matter experts. Besides the production role, I was also the key marketer and disseminator of the work SGI-SA produced."
Response 5	"*StoryTimes* - Backend development and Testing for all stages. *OcuLift* - Stage development - Collect training material and conduct interviews. - Motion Capture, Animation, 3D object development - Test with research participants. App Factory - Assist with any development issues for any projects."
Response 6	"I was involved in the *M27* project. During this project I liaised with the Art department from VUT. Artists were asked to provide concept art around the theme

	of *M27*. I also edited the Afrikaans versions of the M27 posters. During my time at SGI-SA, it was my dream to involve the IT students in this niche area in some way. I implemented the development of serious games in the modules I taught, but was never fully able to get the concept of 'interns' off the ground as the students did not possess the required skills yet, and there was not enough buy-in from the other members at SGI. I co-presented the ITRW324 during 2013 and 2014 from a serious games' perspective, where I provided instruction on how to use Photoshop and create textures for seamless tiling, and my colleague presented 3D modelling in Blender and game dev in the Unreal environment. Students had to create a 3D game for their exam projects. I was able to arrange an internship for a handful of VUT student artists during a July recess in one year, and during the final period of my involvement with SGI-SA I found one IT student with the required game dev skills that was able to assist in the development of one of the games. I co-coordinated the 1st conference on serious games (ICSG2014). I coordinated a 2D 3-day game dev workshop in collaboration with Critical Bit from the Netherlands (was to be held Nov 2015). I did most of the planning, budget specifications and logistics preparation before handover mid-year to the team, however, upon my return later during the year I found out that the workshop had been cancelled. I was the co-supervisor for an MSc pertaining to the graphic novel story authored for the M27 project. Other than that, I reviewed and tested games to a limited extent upon invitation."
Response 7	"New project & opportunities"
Response 8	"Programming of gameplay logic Creating 3D models Creating game scenes using assets and gameplay logic."
Response 9	"I was required to do the bulk of the programming work related to the creation of serious games at SGI-SA. I also had to work out a training regime for the staff that fell under me (unofficially, as I was never meant to have staff, but it then turned out that I did). I was responsible for all asset procurement and planning, project planning and strategic planning of resources, though this was unfortunately not always possible since I was responsible for plans but not officially managing the resources so I could never put plans into action."
Response 10	"Responsible for general administrative duties (arranging an international conference on serious games, communication with delegates and manage all financial aspects of the conference). Manage all short courses (financial, communication and arrangements). Manage the social media (webpage, Facebook and Twitter) on a weekly or monthly basis. Project manager on various projects for the CSIR, TIA projects and community projects. Working directly with stakeholders and prospective customers. Design game assets on Adobe Suite

	(flat and 2d designs) for projects. Design game assets on Blender and 3d Studio Max for projects.”

Table B-3: Sample A - Stakeholder perceptions regarding tools, equipment, information technology and communication systems

Negative response(s)	Positive response(s)
	
Did stakeholders at SGI-SA have the necessary tools and physical resources they needed to work effectively?	
• “Physical resources were limited due to an academic environment in which academic personnel, which were part of the SGI-SA team, needed to distribute their time between projects, teaching and learning, and research. Impossible time frames were given to complete a project, with limited manpower due to 'red tape' in an academic environment and funding.” • “Protocols, record keeping, vision, standards and resource management tooling was severely lacking. Human capital was not available.” • “There was a big demand for serious games and we were really only limited by the number of members that we had in the team and the time available. The time that team members had available was also split between lecturing and development, so the only resources that were limited were team members with the appropriate skills and/or time.”	• “It took a bit of convincing, but we did receive many tools and resources such as strong laptops and latest gaming tech.” • “Software and hardware were supplied upon requested to complete a project.” • “For the most part, physical assets were well represented.” • “Yes. There was funding for research for SGI-SA team.” • “Yes, funding was obtained for various projects which were used to supply the required resources like TIA funding, like mentioned before.” • “Hardware and software were available. We had our own development space and demo room.” • “We did have the necessary resources.” • “The SGI lab was properly equipped with the necessary tools and resources.” • “I hope so! If someone asked, I tried to source it!” • “Yes. We had all the necessary software, and an open Internet connection.”
Did stakeholders have the equipment, supplies, job aids, service standards and protocols, and record keeping instruments they needed at SGI-SA?	

• "The problem came with time resources... The people working at SGI-SA were employed as lecturers. As such, their primary outputs had to be teaching learning and research. This left very little time for game development." • "SGI had access to the necessary equipment etc., whether all of these were efficiently used is a different question." • "Protocols, record keeping, vision, standards and resource management tooling was severely lacking. For the most part, physical assets were well represented, but human capital was not available." • "There weren't many official processes/procedures in place in guide our operations." • "Working with projects in an academic environment was difficult due to the fact that it was new. Protocols were not in place and there was ignorance from the NWU towards the game industry which made the job aids etc. problematic. Uncertainty arises when producing a product and the institution has no idea in assisting with the law aspect, license, IP address owner and sometimes marketing."	• "Being a young start up at the time, I believe we had the sufficient protocols, etc. at the time and continuously improved them as we evolved." • "Yes. The SGI-SA team had leaders (Project managers, funders etc.) therefore they supplied all the necessary needed equipment, supplies, job aids etc to the team." • "Yes, for the most part, any equipment that we needed, we were able to source." • "Yes they did." • "I hope so…"
How reliable and up-to-date were the information technology and communication systems at SGI-SA?	
• "There were two distinct eras at SGI-SA. Technology was always up to date but communication sometimes lacked and stakeholders were in the dark."	• "Information technology and communications, were strongly reliable by making use of emails, What'sApp group chats, telephone calls and informal chats." • "The information technology and communication systems that we used at SGI were adequate. Since SGI operated within the NWU, we had access to most of the same technologies/resources that were available," • "I did not have any major issues with these while I was at SGI-SA. I would

	say reliability was very good and up-to-date." • "Very up to date. We had the latest software and software licenses. We had the latest development hardware (computers and game development kits like the Oculus rift). We also had gaming consoles to play and experience other games." • "I believe everything was always up to date." • "As up-to-date we could be within a technological environment." • "We had access to adequate development machines. We also had a file server that we used to share assets/documents." • "It was appropriately up to date." • "We were equipped with reliable systems (Oculus Rift, Mocamp suits, software programs, office space and licenses) to work on projects."

Table B-4: Sample A – SGI-SA hopes and dreams

**Note to reader: Certain names, pronouns and identifying characteristics were removed from responses to ensure anonymity and safeguard the ethical underpinnings of the study.*

	Raw text	Code
Response 1	"Taken over the world. :) had the team stayed intact, we would have made huge inroads into the local gaming community and the global industry"	POTENTIAL
Response 2	"Finishing on-going projects on time before resigning or quitting a job, because it makes it difficult to pick up someone's work half way through."	PROJECT COMPLETION
Response 3	"Make people aware that learning doesn't have to be difficult and boring, but can be fun and exciting!"	PROJECT PROSPECTS
Response 4	"Put a game development curriculum in place. We had one module that we could dedicate to game development, but this is not enough. If you want an SG lab to be successful, you need to have a continuous feed of interested and talented students available. With a more complete study programme, you will also obtain employable graduates to carry the business part of the unit. That is to say, however, that you employ them as full-time SG developers and not lecturers. I would love to have a follow-up conversation with the researcher on this."	EDUCATION CURRICULUM
Response 5	"I believe we would have made more progress with management that drove us with deadlines. We were quite free to work at our own pace. With all the additional tasks handed to us (such as lecturing and research) it also didn't allow us to make as much progress as we would have liked."	PROJECT MANAGEMENT
Response 6	"The only project the team ever really fully completed was Mandela 27. Other projects SGI-SA was involved with did not really make as much of an impact. The SG conference (2014) was a good starter - but this was never continued. Instead of the conference in 2015 - we were asked to arrange an international workshop during 2015. I did all of the planning for this event, but the team did not follow	PROJECT PRIORITIES

	through when it was handed over to them. I don't think there was ever as much commitment to any of the other projects as there was with M27."	
Response 7	"Contribute positively to the community of practice and body of knowledge in the field of serious games."	COMMUNITY OF PRACTICE
Response 8	"Developing a game that would be effective enough to be adopted by majority of the students on all 3 campuses."	PROJECT ADOPTION
Response 9	"I think the making of serious games should have had a larger focus."	PROJECT PRIORITIES
Response 10	"Being a team that will have the resources (manpower) and time to develop and produce a fully serious game for education, without any interference with the (standard) academic and supporting job descriptions."	INSTITUTIONAL INTERFERENCE

Table B-5: Sample A - Additional thoughts and feelings

**Note to reader: Certain names, pronouns and identifying characteristics were removed from responses to ensure anonymity and safeguard the ethical underpinnings of the study.*

Category of stakeholder	Raw data	Preliminary code(s)	Final code
Development Publishing Context-related Supplementary	"I miss the old days with the team - we really were a great team. If we were paid industry-level salaries and given a bit more control over SGI-SA; I am sure we all would have stayed."	• Good team dynamic • Salary disparity • Lack of power • Resignation	PROJECT TEAM PARTICULARS
Development Context-related	"SGI-SA was a good initiative , however the workload was overwhelming, because we were also required to work as lecturer's and give classes, which tends to take the time work on or fully concentrate on projects. I believe developers should work as developers and not	• Good initiative • Overwhelming workload • Overlap of duties and jobs • Unclear vision	PROJECT PRIORITIES

Category of stakeholder	Raw data	Preliminary code(s)	Final code
	lecturers, this might help projects to be completed on time."		
Development Publishing Context-related Supplementary	No response	No code	No code
Development Publishing Context-related	No response	No code	No code
Development Context-related	"Most of us had a passion for games and game development but also had very limited experience when working at SGI-SA. I believe we would have been able to make much more progress with our projects if we had less obligations. These obligations were mainly made up of lecturing tasks and research projects, which were not always directly linked to SGI-SA projects. We were also free to work at our own pace, which did contribute to a relaxed working environment, but I do believe we would have been able to make more progress if we got more pressure from management. We had a great team to work with."	• Passionate people • Limited experience • Overwhelming workload • Positive working environment • Good team dynamic • Managerial pressure	PROJECT PRIORITIES & PROJECT TEAM PARTICULARS
Development Publishing Context-related Supplementary	"SGI was a great initiative but not well thought through from management above SGI. Human resources available was not enough/ work	• Good initiative • Poor management • Poor planning • Poor work distribution	PROJECT PRIORITIES &

Category of stakeholder	Raw data	Preliminary code(s)	Final code
	distribution was not well planned. The original problem started with the SGI team members being appointed as academic staff with a teaching load, but also being expected to act as developers for projects. SGI-SA was regularly informed about, or requested to develop, new serious game projects. The development load of all of the projects combined was a full-time job. The team members were however still expected to produce on the teaching and research front. The work balance was not well planned. This in turn affected the goal/ vision of SGI. Was SGI a research team? Or a development team?. Yes, there were personal issues that complicated the internal relationships and communication of team members."	• Overwhelming workload • Academic role VS Development role • Full-time job • Unclear vision • Personal issues • Complicated interpersonal relationships	PROJECT TEAM PARTICULARS & MANAGEMENT GOALS/VISION & WORKLOAD MANAGEMENT
Publishing Context-related Supplementary	No response	No code	No code
Development Context-related	"If things are managed well enough, and everyone shares the same set of values/goals, and remember to have fun, then SGI-SA could really go places."	• Significance of management • Shared vision and mission	MANAGEMENT GOALS/VISION
Development Publishing	No response	No code	No code

Category of stakeholder	Raw data	Preliminary code(s)	Final code
Development Publishing Supplementary	"SGI-SA gave me the opportunity to improve my designing skills. During the time working on the three TIA funding projects, we worked effectively, regarding the time limit for each project and limited funding. I do not think the academic environment had enough knowledge to support such a group because of the differences (rules regarding the appointment of an academic or supporting staff working only on projects responsibilities etc.). The work at SGI-SA entitled longer time frames to complete a project (outcomes takes longer with huge financial implications) and flexibility on task agreements. This clashed with the NWU's policies, employment act and the financial resources."	• Skills refinement • Effective working conditions • Limited funding • Limited time • Lack of support structures • Overwhelming workload • Unclear vision • Institutional policies	PROJECT PRIORITIES & PROJECT TEAM PARTICULARS & MANAGEMENT GOALS/VISION & WORKLOAD MANAGEMENT & INSTITUTIONAL CULTURE/CLIMATE

Table B-6: Sample B - Job title, description and outcomes

Respondent	Official job title	Job description	Operational outcomes
1	Research collaborator	Collaborate with SGI-SA members on research	Co-design and research game-related projects
2	N/A (content expert)	N/A (content expert)	Partake in design of a serious game
3	Content Expert	Relay context of subject area to SGI-SA members	Develop a serious game for a History Education module at NWU

Respondent	Official job title	Job description	Operational outcomes
4	Director of TELIT-SA	Promote research development of all TELIT-SA members	Provide administrative support for TELIT-SA; Facilitate professional development of TELIT-SA; Participate in SGI-SA activities; and Promote TELIT-SA as a research entity

Table B-7: Sample B – Activities and specialisations of SGI-SA stakeholders

Stakeholder responsibilities during their time with the interest area:			
Response 1	Response 2	Response 3	Response 4
"Develop a serious game"	"N/A"	"Assist in scheduling activities; Assist in planning research activities and outcomes; Manage time allocation to KPAs of students; and Usability evaluation of games."	"In my capacity I had to provide the designer with my inputs on historical correctness and factual information to ensure accuracy in representing historical figures and places."

Table B-8: Sample B - Stakeholder perceptions regarding tools, equipment, information technology and communication systems

Negative response(s)	Positive response(s)
	
Did stakeholders at SGI-SA have the necessary tools and physical resources they needed to work effectively?	
• "Not entirely. Many times, when having meetings, the developer would state that they needed to obtain specific	• "Yes. *Liike* game nearly completed."

licenses for rendering and programming the game." • "Some areas needed considerable development." • "The internal structures changed and human capacity and support created a shortfall in terms of service delivery."	
Did stakeholders have the equipment, supplies, job aids, service standards and protocols, and record keeping instruments they needed at SGI-SA?	
• "In terms of service standards and protocols, on many occasions the developer would cancel meetings and would take several days to reply to emails, showcasing very low standards of communication with me. No records as far as I know were kept regarding my project." • "In a fast-changing environment, it is hard to keep up with cutting edge equipment. To my mind, SGI was very low on equipment." • "No in so far as availability of equipment, supplies and job aids."	• "Yes, in so far as the paper design of the Serious Game…"
How reliable and up-to-date were the information technology and communication systems at SGI-SA?	
• "Not suitably up to date. As stated in a previous question, some programs were not available and needed licensing in order to use them." • "Not at all. Poorly equipped."	• "The team I worked with was willing and able to help, friendly, skilled and qualified to assist me in obtaining my goals."

Table B-9: Sample B – SGI-SA hopes and dreams

**Note to reader: Certain names, pronouns and identifying characteristics were removed from responses to ensure anonymity and safeguard the ethical underpinnings of the study.*

	Raw text	Code
Response 1	"To be honest with me by stating up front that the serious game I wanted to make was too demanding and that the team needed to be expanded, and not string me along for several months while I wait for some kind of update."	EXPECTATION MANAGEMENT
Response 2	"To be able to make all their dreams come true."	PROJECT SUCCESS
Response 3	"SGI did not keep the momentum of what was envisioned for the group. Too many changes and stakeholders/management and the group did not manage to sustain the vision and mission. Clear once again that leadership and management in any organisation has a vital role in the successes of an organisation. An organisation should live their dream and be reminded of that each day: the changes at NWU had a massive impact on the unit."	VISION/MISSION ADAPTABILITY
Response 4	"They assisted me to obtain my goals even when it was not necessary for them to do so."	SUPPORT

Table B-10: Sample B - Additional thoughts and feelings

Category of stakeholder	Raw data	Preliminary code(s)	Final code
Publishing	"It was the most rewarding academic years I spent in TELIT-SA. It was like a roller coaster ride. Very highs and very lows. However the people at SGI made it all worthwhile…"	• Rewarding • Varied experience • Appreciation for team members	VALUABLE EXPERIENCE
Context-related	"Lecturers and other members at the former SGI-SA is still willing to assist lecturers outside of their school- so thanks."	• Willingness to assist • Former members	PROJECT CONTINUATION

Category of stakeholder	Raw data	Preliminary code(s)	Final code
Context-related	"I honestly really had high hopes for SGI and the [history] serious game I wanted to create. If only the initial project planning stage could have foreseen the need ahead of time to either expand the team or scale down the project, then perhaps it would have been finished. Unfortunately it was abruptly cancelled and I was left with nothing."	• Project scale / scope • Team size • Project completion • Project cancellation • Expectation(s)	PROJECT PARTICULARS / PLAN OR PROJECT FRUSTRATION
Context-related	No response		

Table B-11: Sample C - Job title, description and outcomes

Respondent	Official job title	Job description	Operational outcomes
1	A student who had to design a serious board game for a module at NWU	Serious board game designer	Design a serious board game that provides useful information on programming concepts
2	Student, completing an SGI-SA related project	Table top game designer	Develop an educational and table top board game that incorporated my degree (BSc. IT) into it
3	Rework a game	Communication student	Partake in serious game design and playtest with other students

Table B-12: Sample C – Activities and specialisations of SGI-SA stakeholders

Response 1	Response 2	Response 3
"I was expected to create a serious board game for educational purposes."	"I was expected to develop an education and fun table top game with IT components. This includes	"A redeveloped game from an original concept."

	the rules, board design, scoring system as well as various other game components."	

Table B-13: Sample C - Stakeholder perceptions regarding tools, equipment, information technology and communication systems

Negative response(s)	Positive response(s)
	
Did stakeholders at SGI-SA have the necessary tools and physical resources they needed to work effectively?	
• "I guess not enough time and drive?"	• "Yes, we had no problem the lecturer provided enough resources for us to work from." • "Yes we did, we had various resources available to us as well as academic support where needed."
Did stakeholders have the equipment, supplies, job aids, service standards and protocols, and record keeping instruments they needed at SGI-SA?	
• "No."	• "We weren't provided with any equipment or supplies but we were given a set of standards that had to be followed closely." • "Yes we did, however due to a lack of funding we did face small issues."
How reliable and up-to-date were the information technology and communication systems at SGI-SA?	
• "No."	• "It was extremely up to date as we applied it in the design of our project. The communication system also helped us improve the communication between group members." • "We had no issues."

Table B-14: Sample C – SGI-SA hopes and dreams

**Note to reader: Certain names, pronouns and identifying characteristics were removed from responses to ensure anonymity and safeguard the ethical underpinnings of the study.*

	Raw text	Code
Response 1	"Successfully using a serious game to communicate fact on programming concepts whilst having fun."	FUN LEARNING EXPERIENCE
Response 2	"I thoroughly enjoyed my experience."	N/A
Response 3	"Make something fun and creative that teaches a concept."	FUN LEARNING EXPERIENCE

Table B-15: Sample C - Additional thoughts and feelings

Category of stakeholder	Raw data	Preliminary code(s)	Final code
Development / Publishing	"I think that SGI-SA is a good thing as it would make learning boring facts interesting and fun. It also gives you new ideas regarding different types of board games."	• Good initiative • Enhanced learning experience • Inspirational role	WORTHWHILE ENDEAVOUR
Development / Publishing	No response		
Development / Publishing	No response		

ANNEXURE C: STAKEHOLDER ACTIVITY FAMILIARITY

**Note to the reader: The "familiarity" percentage is the sum of "agree" and "strongly agree" responses per activity variable.*

The following data relates to Section 3 of the online survey sent to SGI-SA stakeholders. The first table shows the development data and accompanying inferences:

Table C-1: Development activity familiarity

Activity variable	Familiarity	Inference
Hardware engineering	28.57%	Niche activity. Extremely poor familiarity.
Art and visual design	50.00%	Specialised activity. Decent familiarity.
Concept art	43.75%	Specialised activity. Poor familiarity.
Illustration	37.71%	Specialised activity. Poor familiarity.
Network administration	21.43%	Niche activity. Extremely poor familiarity.
Data architecture	35.72%	Niche activity. Extremely poor familiarity.
Computer networking	57.14%	General activity. Good familiarity.
Game design	64.71%	General activity. High familiarity.
Systems analysis	52.94%	Specialised activity. Decent familiarity.
Software engineering	53.33%	Specialised activity. Decent familiarity.
Photography	46.67%	Niche activity. Low familiarity.
User interface design	62.50%	Specialised activity. Good familiarity.
User experience design	64.71%	Specialised activity. Good familiarity.
Database administration	53.84%	Specialised activity. Decent familiarity.
Data science	42.85%	Niche activity. Poor familiarity.
Web development	75.00%	General activity. High familiarity.
Application development	66.66%	Specialised activity. Good familiarity.
Programming	66.67%	Specialised activity. Good familiarity.
Sound design	26.67%	Niche activity. Extremely poor familiarity.
Writing	52.94%	General activity. Good familiarity.
Music composition	7.14%	Niche activity. Extremely poor familiarity.

The second table shows the publishing data and accompanying inferences:

Table C-2: Publishing activity familiarity

Activity variable	Familiarity	Inference
Product management	37.50%	Niche activity. Extremely poor familiarity.
Creative management	50.00%	Specialised activity. Decent familiarity.
Project management	66.67%	Specialised activity. Good familiarity.
Art direction	33.33%	Niche activity. Extremely poor familiarity.
Technical direction	40.00%	Specialised activity. Extremely poor familiarity.
Marketing	53.34%	Specialised activity. Decent familiarity.
Market research	40.00%	Niche activity. Extremely poor familiarity.
Graphic / brand design	43.75%	Specialised activity. Poor familiarity.
Customer experience design	53.33%	Specialised activity. Decent familiarity.
Reviewing	73.34%	General activity. High familiarity.

The second table shows the context-related data and accompanying inferences:

Table C-3: Context-related activity familiarity

Activity variable	Familiarity	Inference
Content expertise	60%	Niche activity. Good familiarity.
Scholarship and research	66.67%	Specialised activity. High familiarity.
Education	68.75%	Specialised activity. High familiarity.
Research management	60%	Niche activity. Good familiarity.
Teaching and learning	66.67%	General activity. High familiarity.

The second table shows the supplementary data and accompanying inferences:

Table C-4: Supplementary activity familiarity

Activity variable	Familiarity	Inference
Business development	35.29%	Niche activity. Extremely poor familiarity.
Law	13.34%	Niche activity. Extremely poor familiarity.
Brand management	31.25%	Niche activity. Extremely poor familiarity.
PR management	20%	Specialised activity. Extremely poor familiarity.
QA management	35.29%	Specialised activity. Extremely poor familiarity.
Talent recruitment	25%	Niche activity. Extremely poor familiarity.
Game reviews	60%	Specialised activity. Good familiarity.
Licensing	6.67%	Niche activity. Extremely poor familiarity.

Activity variable	Familiarity	Inference
Funding	31.25%	Niche activity. Extremely poor familiarity.

ANNEXURE D: INTERVIEW RECOMMENDATIONS

The following classifications serve as value judgments regarding which interview participants would potentially contribute the most significant information pertaining to a follow-up of this study. The first group (5 questions) relates to all four functional categories identified:

Table D-1: Interview question index (four categories)

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
Who, in your opinion, could have been affected by operations or projects at SGI-SA *during* project completion?	X	X	X	X	Ensure the correct SG stakeholders have been surveyed and to validate the definition of "SG stakeholder" followed in the study.	Perceptions of SGI-SA stakeholders regarding operations at SGI-SA.
Who could have had an interest in the outcome of projects at SGI-SA?	X	X	X	X	Discover which groups could have been impacted or have an interest/stake in projects at SGI-SA.	Relates to stakeholders as defined in literature.
If you were in charge of strategic planning for SGI-SA, what changes would you have made?	X	X	X	X	Explore stakeholder perceptions, thoughts and feelings regarding hierarchical structures at SGI-SA.	Considers the stakes, legitimacy, power and urgency of SG stakeholders.
How efficient was SGI-SA from an operational standpoint?	X	X	X	X	Learn more about the efficiency of operations at SGI-SA.	Looks at the organisational nature of SGI-SA.
How well did SGI-SA utilise its people as an asset to help it improve, stay competitive, and strategically meet goals? Were people used efficiently or was talent wasted due to lack of effective strategy?	X	X	X	X	Determine whether SGI-SA adequately utilised existing resources; including the use of people and their particular strengths.	Zooms in on stakeholders as vital elements in effective organisational functioning.

The second collection (10 questions) pertains to at least three functional categories:

Table D-2: Interview question index (three categories)

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
Who approved functional or technical requirements at SGI-SA?	X	X	X		Investigate activities at SGI-SA.	Considers relationships between stakeholders.
Who would approve changes at SGI-SA?	X	X	X		Explore activities and hierarchical structures at SGI-SA.	Studies the nature of an SG interest area.
Was the long-term view for SGI-SA reflected in the short-term priorities? In short: Were stakeholders putting effort into initiatives that have connections with where they expected themselves/market to be in the future?	X	X	X		Determine whether or not SGI-SAs long-term strategy considered the future to ensure durability of the plan and the unit, itself.	Magnifies the activities of SG stakeholders as they relate to both their positions and specialisations.
Was SGI-SA pursuing growth and new business/market development with as much passion as it did operational efficiency?	X	X	X		Address the importance of planning for the future and the sense of urgency for growth at SGI-SA.	Considers stakeholder management and strategy.
How effective was SGI-SA's strategic vision?	X	X	X		Discover if SGI-SA had a clear view of its future position within a given market.	Considers SGI-SA's strategy.
How effective was SGI-SA's delivery model?	X	X		X	Learn if SGI-SA had a method for getting their offerings to the customer (go-to-market strategy).	Considers the function of an SG interest area.
To what degree were SGI-SA's offerings clearly differentiated in the market?	X	X		X	Explore if SGI-SA distinguished its products from that of competitors to permeate the	Considers the outputs of an SG interest area.

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
					market as much as possible.	
How aligned were SGI-SA's offerings to meet market demand?	X	X		X	Investigate if SGI-SA produced offerings that leveraged the unit's resources and if they delivered the correct products to their target market.	Considers the outputs of an SG interest area.
How many established outlets did SGI-SA have through the Internet (social media, websites, etc.)?	X	X		X	Gather insight into how well SGI-SA utilised their online resources.	Considers the function of an SG interest area.
What are your perceptions regarding the serious games produced by SGI-SA?		X	X	X	Investigate perceptions regarding serious games media developed by SGI-SA.	Considers the outputs of an SG interest area.

The third group (10 queries) looks to serve two functional categories:

Table D-3: Interview question index (two categories)

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
Who managed SGI-SA?	X	X			Determine management activities, claims and specialisations at SGI-SA.	Considers the legitimacy, power and urgency of SG stakeholders.
In your opinion, did SGI-SA's corporate responsibility strategy match the	X	X			Investigate stakeholder management activities at SGI-SA.	Considers the nature and function of an SG interest area.

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
availability of its current resources?						
Who would approve designs at SGI-SA?	X	X			Investigate development activities at SGI-SA.	Considers the nature of an SG interest area.
Who would test the end product?	X	X			Investigate development activities at SGI-SA.	Considers the function of an SG interest area.
How many established connections to other businesses did SGI-SA have?	X	X			Explore communication activities at SGI-SA.	Considers the function of an SG interest area.
Who would assess/audit quality on these projects?	X	X			Investigate development activities at SGI-SA.	Considers the function of an SG interest area.
How clear was your vision for what corporate responsibility should be like in SGI-SA's future? Was the direction that the unit wanted to go clear and understandable?	X	X			Investigate stakeholder management activities at SGI-SA.	Considers the strategy of an SG interest area.
Did employees have the necessary knowledge and skills to do their jobs?	X		X		Investigate stakeholder positions/specialisations at SGI-SA.	Considers the nature of an SG interest area.
Did personal attributes of individuals affect their ability to work together and achieve their goals at SGI-SA?	X		X		Audit communication aspects of SGI-SA.	Considers the nature of an SG interest area.
How well did SGI-SA's products solve the customers' problems and meet their expectations?	X			X	Investigate publishing activities at SGI-SA.	Considers the output of an SG interest area.

The fourth and final collection (10 questions) pertains to one functional category per question:

Table D-4: Interview question index (one category)

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
Who held the project budget at SGI-SA?		X			Investigate stakeholder positions at SGI-SA.	Considers the nature of an SG interest area.
Who were the customers for the products and services produced by SGI-SA, e.g. agents, distributors, traders, operators, end users, etc.?		X			Investigate publishing activities at SGI-SA.	Considers the nature of an SG interest area.
Who sat on the project board for SGI-SA?		X			Investigate publishing activities at SGI-SA.	Considers the nature of an SG interest area.
How often did SGI-SA assess its strengths, weaknesses, opportunities, and threats in order to understand the business climate?		X			Investigate publishing activities at SGI-SA.	Utilises a diagnostic tool (Power-Interest matrix) to learn more about SG stakeholders.
How effectively did SGI-SA form and make profitable use of partnerships?		X			Investigate publishing activities at SGI-SA.	Considers the function of an SG interest area.
When developing and implementing strategies, did SGI-SA effectively balance short and long-term priorities?		X			Did managers at SGI-SA plan how to improve and evolve their strategic objectives over time?	Considers stakeholder management of an SG interest area.
To what extent did your teaching and learning expertise impact on work done at SGI-SA?			X		Investigate context-related activities at SGI-SA.	Considers the function of an SG interest area.
Were you expected to perform game design activities during your time with SGI-SA?			X		Investigate context-related activities at SGI-SA.	Considers the nature and function of an SG interest area.
Were you aware of SGI-SA during its				X	Investigate supplementary	Considers the nature of

Question	Functional category of stakeholder				Rationale	Research aim(s)
	Development	*Publishing*	*Context-related*	*Supplementary*		
time as a functional SG interest area? If so, what was your perception of the group and the output thereof?					activities at SGI-SA.	an SG interest area.
Would you voluntarily choose to play SGI-SA's serious games?				X	Investigate supplementary activities at SGI-SA.	Considers the nature of an SG interest area.

All participants should be interviewed using face-to-face, recorded, semi-structured interviews that are transcribed, coded and analysed to generate themes relating to the study aims.

The strengths of semi-structured interviews include the following (Van Teijlingen, 2014:21):

- Expedite the answering of all questions formulated by the researcher;
- Complement the exploration of values, beliefs, attitudes and motives because of the conversational tone of the discussion;
- Non-verbal communication and cues can be observed and recorded to gauge sincerity;
- Could possibly increase the response rate; and
- Make sure the interviewee works on their own when contributing/answering questions.

The weaknesses of semi-structured interviews include the following (Van Teijlingen, 2014:22):

- Particular groups may be unrepresented due to access or infrastructure issues;
- Participant privacy may be undermined by sensitive questions and or locale-related problems;
- Stereotypes, prejudices, appearances and/or perceptions of the researcher may affect interviewee response(s);
- Interviewees may respond in ways that could be considered the 'preferred social response' because they are afraid to relay their own, personal opinions; and
- Exclusive characteristics of the interview may become lost in translation if the interviewer does not observe latent features of the discussion i.e. phrasing, emphasis, eye contact, etc.

Finally, the researcher should follow the ensuing guidelines for conducting effective semi-structured interviews, as posed by Van Teijlingen (2014:27):

- Create and sustain a rapport with the interviewees;
- Ask questions that use clear and simple language;
- Permit longer pauses and long-winded answers;
- Abstain from making judgments regarding what interviewees share; and
- Refrain from drawing attention away from the interviewee.

The interviews should gather interpersonal answers from interviewees in order to round off the stakeholder profile according to the four functional categories and more precisely, their positions, activities and specialisations as stakeholders at SGI-SA. Responses should be recorded and transcribed and could further be analysed to garner an understanding of the Who?, What?, Where?, When?, Why? and How? of these individuals and their experience working at an SG interest area. Diagnostic tools (Power/Interest Matrix, Salience Model, etc.) identified during Chapter II could also be utilised during this phase to fill any gaps recognised from the survey data. Overall, longform questions posed during this empirical phase should allow interviewees the opportunity to more comprehensively express their thoughts, feelings and perceptions regarding their own stakeholder experience at SGI-SA. Supplementary field notes and observation must also be taken/conducted to portray an accurate picture of participant responses.

ANNEXURE E: ETHICAL CLEARANCE LETTER

Faculty of Natural and Agricultural Sciences
Ethics Committee
Private Bag x6001, Potchefstroom,
2520, South Africa
Web: http://www.nwu.ac.za

Tel: +27-18-299-2521
Fax: +27-18-299-2503
Email: oriel.thekisoe@nwu.ac.za
Date: 04 September 2019

To: Mr LR Bunt

RE: Approval of your application by the FNAS Ethics Committee

Ethics number: NWU-001175-19-S9

Study title: Investigating perceptions of stakeholders' positions, activities and specialisations at a serious game interest area

Study leader: Dr C Venter and Mr JJ Greeff

Student: Mr LR Bunt

You are kindly informed that after review by the FNAS Ethics committee, North-West University, your ethics approval application has been successful.

Your study has been approved as a **Low Risk** project with the following conditions.

- Informed consent must be submitted to committee in case of questionnaire survey.
- Permission letter from study area owner/authority e.g. farmer, manager etc.
- You must submit monitoring report/progress report of study mid-year to commencement of study and after completion of the study.

Yours sincerely,

Prof. Oriel Thekisoe

Acting Chairperson

FNAS Ethics Committee

ANNEXURE F: LANGUAGE EDITING CERTIFICATE

Coordinators: Wendy Barrow & Menitza Botha
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21 October 2019

EDITING CERTIFICATE: 19-282

To whom it may concern

This letter serves to confirm that the MSc dissertation with the title: *Investigating perceptions of stakeholders' positions, activities and specialisations at a serious game interest area* has been language edited by the *Centre for Translation and Professional Language Services* (CTrans). CTrans is a registered corporate member of the South African Translators' Institute (SATI) that makes use of qualified and experienced language practitioners to provide professional translation and language editing services.

CTrans hereby acknowledges that the document has undergone a proper and professional language edit (including the checking of spelling, grammar, register and punctuation). The onus rests on the client to work through the proposed changes after the edit and accept or reject these changes.

Yours sincerely

Wendy Barrow

CTrans Coordinator