



# **Factors impacting on membership and participation in a selected electrical engineering voluntary professional association in the Western Cape, South Africa**

by

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## DECLARATION

I, **Nolufefe Nonkumbuzo Ngalonkulu**, declare that the contents of this dissertation represent my own unaided work, and that the thesis/dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

A handwritten signature in blue ink, appearing to be 'N. Ngalonkulu', with a large, sweeping flourish extending downwards and to the right.

Signed:

Date: 31 October 2023

## **ABSTRACT**

Voluntary professional associations (also known as professional bodies, professional organisations, or professional societies) have been in operation in the non-profit sector for many centuries. These types of organisations exist in the different fields and professions to support the growth and development of the industries they operate in. Even though taking up membership and participating in the activities of these professional associations is voluntary, professionals are always encouraged by their employers to affiliate with them for their personal development and added benefits such as: access to professional knowledge, career development and advancement resulting from courses and seminars attended, career networking with other peers in the region, certification opportunities, publication in journals, continuing education (continued professional development) that assist with professional registration, access to conferences and webinars and access to local chapter support, training and mentorship.

This study examined various factors that influenced electrical engineers residing in the Western Cape (WC) [not] to take up membership with the South African Institute of Electrical Engineers (SAIEE) and, where membership was taken, [not] to participate in the interventions offered by SAIEE in the WC. Although several studies have been conducted in other professional fields (education, accounting, and information technology and so forth) to determine why professionals either join or do not join and why they participate or do not participate in voluntary professional associations, there is however little literature on this phenomenon in the field of electrical engineering in South Africa. This study should contribute to narrow the gap in the body of knowledge.

This study employed the mixed methods design approach. The study capitalised on the strengths of both the qualitative and quantitative methods to increase the scope and depth of the results. Online survey questionnaires and focus group interviews were administered to electrical engineers who are members as well as non-members of SAIEE in the WC. Open-ended questions were also included in the questionnaire in order to capture qualitative information.

Continuing Professional Development (CPD) activities, access to events, courses, seminars/webinars and research publications were ranked amongst the major factors

that motivated electrical engineers to join and participate in SAIEE. The cost of membership and the fact that the employers did not recognise SAIEE, ranked highest on the factors that demotivated electrical engineers to join SAIEE. In terms of the factors that were demotivating the electrical engineers from participation in SAIEE interventions; the location / venue where the events were held and the time the events were held ranked amongst the highest factors that demotivated the electrical engineers from participating.

To increase membership and improve participation, the respondents agreed that SAIEE needed to find alternative funding options to lower the cost of membership. It was also suggested that SAIEE's visibility should be improved, in terms of marketing and social presence, especially at academic institutions.

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## DEDICATION

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## ABBREVIATIONS

4IR	Fourth Industrial Revolution
AC	Alternative (Electrical) Current
COVID-19	CoronaVirus Disease - 2019
CPD	Continued Professional Development
CPUT	Cape Peninsula University of Technology
CVM	Customer Value Management
DC	Direct (Electrical) Current
EC	Eastern Cape (Province in South Africa)
ECSA	Engineering Council of South Africa
ERG	Existence, Relatedness and Growth theory of motivation
ESKOM	Electricity Supply Commission (state owned enterprise)
EVT	Expectancy-value theory of motivation
ICNPO	International classification of Non-profit organisations
IoT	Internet of Things
KZN	KwaZulu Natal (Province in South Africa)
MIT	Massachusetts Institute of Technology
MS Teams	Microsoft Teams application used for online meetings
PoPIA	Protection of Personal Information Act
SA	South Africa
SAIEE	South African Institute of Electrical Engineers
SENTECH	Signal distributor in SA (state owned enterprise)
STF	Systems Thinking Framework
SU	Stellenbosch University
TELKOM	South African wireline and wireless telecommunications provider (state owned enterprise)
TRANSNET	South African rail, port and pipeline company, (state owned enterprise)
UCT	University of Cape Town
UN	United Nations
UoT	University of Technology

VPA  
WC

Voluntary Professional Association  
Western Cape (Province in South Africa)

# CHAPTER 1

## INTRODUCTION AND BACKGROUND

### 1.1 Introduction

Voluntary professional associations (also known as professional bodies, professional organisations, or professional societies) have been in operation in the non-profit sector for many centuries. These types of organisations exist in the different fields and professions to support the growth and development of the industries they operate in. Even though taking up membership and participating in the activities of these professional associations is voluntary, professionals are always encouraged by their employers to affiliate with them for their personal development and professional growth. As some scholars (Sobkin & Adamchuk, 2015; Wang & Ki, 2018) suggest, membership of professional associations yields significant benefits for the professionals (both tangible and symbolic) which range from access to professional knowledge, career development and advancement resulting from courses and seminars attended, career networking with other peers in the region, certification opportunities, publication in journals, continuing education (continued professional development) that assist with professional registration, access to conferences and webinars and access to local chapter support, training and mentorship. As far as the Electrical engineering sector is concerned within the South African context, the South African Institute of Electrical Engineers (SAIEE) is one of various voluntary professional associations that provide professionals with voluntary opportunities.

Despite the benefits associated with voluntary professional associations, Wang and Ki (2018:71) identify the following challenges that were experienced by these associations:

- ❖ lack of participation by members,
- ❖ difficulties recruiting and motivating recruited members,
- ❖ difficulties with the retention of old members and
- ❖ declining membership.

Note that SAIEE is not exempted from these challenges since there has been a decline in membership and in members' participation at the Western Cape (WC) centre. Even though institutions of higher learning (universities) graduate more

electrical engineers each year and who sometimes start working as soon as they have graduated; the average attendance recorded for each intervention was 36 attendees and below. For example, in 2017 the average number of attendees that participated in the SAIEE's 10 lectures held in the WC, was 36 that per meeting. There was a similar occurrence in 2018 where the average number of attendees for the lectures was 34 per meeting, as indicated by the SAIEE WC attendance register (2018). This was out of 700 active members of SAIEE in the WC that were invited to attend these lectures. Given this low number of attendances which is equivalent to 4.8%, this study examined various factors that influence electrical engineers residing in the WC [not] to take up membership with the SAIEE and, where membership is taken, [not] to participate in the interventions offered by SAIEE in the WC. The study considered the role of voluntary professional associations and how they function and the benefits they offer to their members. The study engaged with theories of motivation in order to assess what (de)motivates some electrical engineers (not) to take up membership and (not) to participate in the voluntary professional associations.

The Royal Academy of Engineering (2016) alludes to the fact that electrical engineering is regarded as one of the scarce skills in South Africa (SA), that couple with the scarcity of post qualification training and skills development that can guarantee graduates employment. Faced with this challenge, one of the ways in which electrical engineers continuously develop and improve their skills is through joining and participating in training programs organised by voluntary professional associations that serve their interests. While the engineering field plays a key role in supporting the growth and development of a country's economy as well as in improving the quality of life for citizens, Engineering Council of South Africa (ECSA) (n.d.) records show that SA has 1 engineer for every 3100 people, compared to Germany which records 1 engineer for every 200 people. Given the disparity in these recordings, ECSA (n.d.) suggested that SA produces and train 10 times more engineers to be able to compete favourably with the developed countries. Even though, SA and Germany differ greatly in terms of their economic status and other dynamics such as population, the comparison still serves the important function of showing the needs in terms electrical engineer training in SA. The SAIEE's purpose is to enhance the practice of electrical engineering in SA through the training that is

provided via its channels (webinars, contact and mentorship) with the intention as well of mitigating different challenges that were highlighted above. Although several studies have been conducted in other professional fields (education, accounting, and information technology) to determine why professionals either join or do not join and why they participate or do not participate in voluntary professional associations, there is however little literature on this phenomenon in the field of electrical engineering in South Africa.

## **1.2 Research problem**

The SAIEE WC centre has recorded a decline in the participation of members in its initiatives and, in the uptake of new membership over the past five years. The South African Institute of Electrical Engineers (2020:31) expects the membership of a centre to be constitutive of those members of all grades in the institution who reside in a geographical area which has been defined by postal codes and who are able to take part in the activities within that centre. From the membership records, the WC centre had a confirmed active membership of approximately 700 people between the years 2017 to 2019. This number fluctuated due to additional new members, cancellations, and transfers between provinces. For the year 2017, there were 10 lectures and the attendance register showed that the average number of attendees was 36 per meeting. In 2018, the average number of attendees for the lectures was 34 per meeting, and in 2019, the average number of attendees was 35 per meeting. The years 2020 and 2021 do not form part of these records, because the country was on a COVID-19 lock. This trend of both low participation and uptake of membership triggered the interest to investigate what could be the contributing factors. In spite of the advantages associated with membership of SAIEE and participation in the initiatives of the association, a large proportion of electrical engineers did not take up membership and a significant proportion of members did not participate in its initiatives and interventions. Given this variation in members participation, this study is therefore interested in knowing the factors underlying that shift in membership and participation. Note that SAIEE is a non-profit organisation in which membership is voluntary and whose purpose is to enhance the practice of electrical engineering in SA. Thus, by conducting this study, the researcher should offer recommendations that may assist SAIEE and similar associations to implement measures that attract more members and ensure greater participation and retention

of members in the interventions of the association.

### **1.3 Research aims, objectives and questions**

Building on available knowledge on voluntary professional associations, this study aimed at examining different factors that influence electrical engineers (not) to take up membership and [not] to participate in the interventions of the professional voluntary association SAIEE.

The sub-objectives supporting the main objective are:

- ❖ To make recommendations on how to attract members into SAIEE and retain them.
- ❖ To recommend how SAIEE can improve participation from electrical engineers.

#### **1.3.1 Research questions**

The main research question for the study is: What are the factors that de/motivated electrical engineers from/to take[ing] up membership and, what de/motivated them (not) to participate in the activities of the voluntary professional association called SAIEE, in the WC?

The supporting sub-questions to address the main research question are:

- ❖ What can SAIEE do to attract and maintain members?
- ❖ How can SAIEE improve the participation of electrical engineers in its activities and interventions?

### **1.4 Justification and significance of the study**

It is important for an association like SAIEE to be adaptable, in response to the demands and needs of its members and other professionals in the sector it serves. It was anticipated that the study will reveal to SAIEE and other similar institutions the reasons why practitioners in engineering and related fields (do not) join professional associations and what informed their decision (not) to participate in initiatives of their associations. Further, the study would reveal what can be done to improve membership uptake and participation and consequently, make suggestions on areas

that require improvement. There was a need for SAIEE and similar organisations to recruit more members and ensure sustainability in continued professional development of electrical engineers in South Africa. The results of this study may provide SAIEE and similar organisations with information that may be useful in seeking to address the problems highlighted earlier. The research was carried out in the Western Cape, but the findings of this study would have significant implications and relevance in the field of electrical engineering in the other provinces of SA and beyond SA. The issues of membership and member participation are significant as they have a bearing on the sustainability of the electrical engineering profession and of course, that of SAIEE. The sustainability of the electrical engineering industry is very crucial, as this industry is deemed essential for the economic growth and development of the country and voluntary professional associations such as SAIEE play an important role in addressing this. This study would benefit SAIEE specifically in ways that would assist it to play this role more effectively. The SAIEE would be able (if it draws on the results of this study) to form an opinion about the expectations of the electrical engineers it serves. Failure to identify and respond to factors that demotivated prospective members from joining the association and members from participating in events would result in fewer members and consequently, less revenue for SAIEE WC, which may affect its ability to continue with operations and to offer support to the electrical engineering industry. From the available literature, there was plenty of evidence that pointed to the existence of voluntary professional associations in other industries such as the health industry and education. Such literature covered the factors that determine the members' continued renewal of membership, and how such professional associations benefitted their members. On the other hand, to the knowledge of the researcher, there was no evidence of literature on professional associations in the electrical engineering sector, especially in SA. This study should contribute to narrow the gap in the body of knowledge.

## **1.5 Research Paradigm, Methods and Design**

### **1.5.1 Research paradigm**

Tracy (2013) refers to research paradigm as the various ways of understanding the social reality (also named a framework or worldview). These research paradigms further expand on how knowledge is gathered and built up about the world. Tracy (2013) further asserts that different researchers take different stances based on the



ontological position, epistemology, axiology or methodology when conducting research. Terreblanche et al. (2006) define ontology as the basis for what the person believes to be their nature of reality that is to be researched. The ontological position of this research was based on the pragmatism approach, where there is no single way to learning the realities of a phenomena but many ways of understanding because there are multiple realities experienced by different people. The different electrical engineers have different experiences from different electrical fields, and the decisions they take in terms of either being members of voluntary professional associations is based on individual experiences, their life realities, and their views of the world. The pragmatism view recognises that there are different ways of interpreting the world and undertaking research, knowledge of the multiple realities is therefore gained through an integration of multiple research methods encompassing both qualitative and quantitative research methods. As Creswell and Creswell (2018) argue, pragmatism is borne out of actions, situations, and consequences. Thus, the researcher hoped to gain a better understanding of the manifestation problem/s under study from the views of different people who lived the experiences. Leavy (2017) suggests that pragmatic researchers put more emphasis on the research problem and ensure that they use all available resources to understand the problem. The different electrical engineers have different experiences from different electrical fields. The research will thus take place in the social world, as it involves answering why people do what they do. The study also examines the decision-making process of the electrical engineers in the Western Cape, pertaining to why they take up membership and participate in the interventions of SAIEE. The pragmatic approach supports the mixed methods design, encompassing both qualitative and quantitative research methods, which will be more suitable for this study.

### **1.5.2 Research method**

Following the pragmatic worldview, the study adopted the mixed method approach with the sole purpose of achieving completeness. By so doing, the qualitative component of how people feel and behave complimented the quantitative component, thereby exposing various factors that influence respondents (not) to take up membership and (not) to participate in interventions organised by SAIEE. As

Leavy (2017) suggests, the mixed methods research opens doors to multiple methods that can be deployed in one study, resulting in different forms of data being collected and analysed. Using the two methods in this study ensured that the strengths of both the qualitative and quantitative methods increased the scope and depth of the study. As Blickman and Rog (2009) state, the mixed method study is very significant as it brings forth completeness to the research, which ensures a richer insight about the electrical engineers' feelings about joining and participating in SAIEE interventions. This centrally linked all methodological decisions to the research question. From the three primary types of mixed methods, namely sequential, convergent, and nested mixed methods, this study deployed the convergent or concurrent parallel mixed method design which simultaneously collected both quantitative and qualitative data and merged the data. The collected datasets were analysed and both data sets were integrated to compliment the findings from the individual methods, while trying to answer the research questions. The literature reviewed has shown that studies that have been done in this area were mainly quantitative in nature. This may be attributed to the size of the target population, which was observed to be in thousands and hundreds of thousands, making the quantitative method more suitable. These studies were also conducted at the international level or across national borders by incorporating different professional associations in each study. Unlike most previous studies, the research concentrated on one voluntary professional association, SAIEE, to narrow down the research problem. The convergent parallel mixed method contained online survey questionnaires and focus group interviews. The benefit will be the generation of data that cannot be obtained if a singular method were to be employed. There is no valuable data that explains why people attend or do not attend the interventions in WC. The focus group method expanded and built on the results of the online survey to uncover research participants' feelings about taking up membership and participation in the interventions organized by SAIEE.

### **1.5.3 Research design**

Kothari (2004) defines research design as the conceptual structure and logical sequence within which research is conducted. In addition, Nayak and Singh (2015) simplifies the research design as the process that creates a blueprint of activities to

undertake in order to satisfactorily answer the research questions of a study. A good research design is characterised by flexibility, efficiency, and minimal bias. Akhtar (2016) lists four types of research designs that can be explored in social studies, namely exploratory, descriptive, explanatory, and experimental. The most relevant design for this study is the descriptive research design, which assists the researcher describe the findings. Leavy (2017) refers to the three descriptive statistics drawn from the quantitative data, namely the measure of central tendency, measure of dispersion and the frequency of occurrence. This research design is suitable for a study that describes the current situations, social events, social structure, and social situations. Akhtar (2016) re-iterates the notion that a descriptive design may be concerned with the attitudes or views (of a person) towards any occurrence. Thus, considering this design is an appropriate choice as it allows the researcher to determine the attitudes and/or perceptions of electrical engineers towards affiliation with the voluntary professional association, SAIEE and what drives them to either or not attend the interventions of the association. In descriptive studies, the researcher is required to have a clear-cut definition of the population and in this case, the population is made up of electrical engineers in the WC. Out of the three methods that can be employed for the descriptive research design, Leavy (2017) asserts that the convergent parallel mixed methods design is more appropriate and that is the option selected for this study. The convergent parallel mixed methods as applied in this study ties in with the pragmatism paradigm. Both online surveys and focus group interviews will be administered to the electrical engineers. The focus group interviews will be done to elicit detailed descriptions of their feelings and attitudes towards membership and participation in the interventions of the SAIEE. The integration of quantitative and qualitative data should result in a more comprehensive understanding of the phenomenon under investigation.

### **1.6 Ethical considerations**

The research process complied with the following ethical considerations as stipulated by Greener (2011).

- ❖ The researcher stated (in a cover letter) the intended use of the research; methods and the purpose of the research, including a letter from the body that granted authorisation to proceed with the research (SAIEE). The researcher also clarified in the letter that there was no any risk that may be

attached to this study or data of the participants.

- ❖ The nature of the survey guaranteed anonymity. The SAIEE membership secretary at head office circulated the survey to a sample of Western Cape members. No participants were asked to disclose their names. Confidentiality of information shared by the subjects was observed.
- ❖ Participation in the survey was voluntary and would-be participants were also informed of the fact that they could withdraw from the study at any time should they wish to do so. There were no experiments on human bodies and no harm was exerted on participants.
- ❖ The researcher declared that there were no conflicts of interest.
- ❖ The research report was submitted for a similarity index and report, within the parameters of the Faculty of Business and Management Sciences rules.
- ❖ The researcher acknowledged the information from the secondary sources through correct and acceptable referencing (citation) methods.
- ❖ The researcher received ethical clearance from Cape Peninsula University of Technology (CPUT) for this study. The SAIEE also granted permission for the study of their members.

### **1.7 Study limitations**

The study focused only on selected electrical engineer professionals working in the WC Province, SA. The population was drawn from:

- ❖ Electrical Engineers in the Western Cape that are members of SAIEE.
- ❖ Electrical Engineers in the Western Cape that are not non-members of SAIEE.

What was not covered by the study?

- ❖ Electrical engineers who did not reside in the WC Province, SA.
- ❖ Electrical Engineering students.

The main limitation was the time it took to collect the data. The survey was live on SurveyMonkey® for three months. However, the response rate was lower than expected but was in agreement with the observation made by Marsden and Wright (2010, p. 527) that “[n]on-response rate in internet surveys has been recorded to be very high”. Only 10% of the population responded to the online survey. The focus groups address the gaps from the non-responses. Locating and accessing electrical

engineers who are non-SAIEE members was also a limitation because there was no central location where their details are stored. The only way to access those individuals was through networking to collect contact details that can be used for sharing the survey instruments to the non-SAIEE members.

### **1.8 Structure of the report**

The study is structured in five chapters.

CHAPTER 1 named '*Introduction and background*' introduces the study and provides a background and context to the research. The chapter briefly outlines the research problem and lists the research aims, objectives and questions. It further discusses the rationale and significance of the research. The chapter also provides an overview of the ethical considerations and the contribution of the research. Limitations of this study conclude the chapter.

CHAPTER 2, namely '*Literature review*' reviews available literature on the area of study. By so doing, it reviews existing literature relevant to the topic under study and note any gaps in the body of knowledge. The chapter identifies the role that voluntary professional associations play in certain sectors and provides a historical overview of SAIEE. The chapter discusses as well different factors that shape people's desire to either affiliate or not with those associations. For example, some of the factor-related points discussed include earned and perceived value of affiliating with professional associations, motivation, participation, involvement, and continued commitment to the voluntary professional associations.

CHAPTER 3 which is titled '*Research methodology and design*' provides an overview of the methodology and techniques that were adopted in conducting the study. The chapter explains the research design, research approach, target population, sample size and sampling technique used for the sample, and the procedures of data collection and analysis.

CHAPTER 4 is about the presentation and analysis of the research findings. In this chapter, all the data that was gathered is analysed, presented, and discussed. The different paradigms on the subject matter are addressed. The results are presented

in the form of descriptive data and themes. Results are captured, analysed and interpreted. The responses from the SurveyMonkey® are discussed, drawing on perspectives from previous literature to engage with the data.

CHAPTER 5 titled '*Conclusions and recommendations*' concludes this dissertation by providing a general overview of the findings and the implications of these findings. It further proposes possible approaches that should be implemented to resolve any issues identified in the study.

References Books, websites, relevant academic papers referenced in the study.

### Summary

This chapter described the rationale and the objectives of this research. The problem statement and the main research questions were identified within this study. The research design, methodology and ethical considerations were discussed. The next chapter discusses the available literature that deals with voluntary professional associations, volunteering, membership of and participation in voluntary professional associations, continued professional development and value proposition of the professional associations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In the previous chapter, the concept of voluntary professional association (VPA) (also known as professional bodies, professional organisations, or professional societies) was introduced with the focus being on the electrical engineering field. The benefits associated with being a member of a professional association were also discussed.

In this chapter, the researcher undertakes a critical review of what the existing body of knowledge says about the research problem in this study. As Creswell and Creswell (2018) stress, studying literature provides a useful backdrop for the problem or issue that has led to the need for the study and also sheds light on who has been written or studied about it, and what gaps have been highlighted. This chapter explores ways in which the accumulated body of knowledge offers various meanings associated with the key aspects of the study. These include:

- ❖ A general background of the professional associations and the history of the South African Institute of Electrical Engineers (SAIEE).
- ❖ A review of the role the voluntary professional associations play in particular sectors, how they function and what they offer to their members in terms of professional development.
- ❖ An understanding of what motivates or drives professionals in general and electrical engineers to take up membership with voluntary professional associations.
- ❖ An understanding of the concept of participation, involvement, and continued commitment to the voluntary professional associations that motivates electrical engineers to participate in SAIEE interventions.
- ❖ The earned and perceived value of affiliating with professional associations.

Librero (2012:49) argues that literature review is crucial when interpreting the results and it assists in outlining implications of the research study. Jesson, Matheson and Lacey (2011:19) viewed the research questions as a guide that provides a clear structure and flow for the whole literature review. Galvan and Galvan (2017: 3) identified the different sources of information one may use to review literature, as primary and secondary sources. Primary sources of data is collected first hand by the researcher whereas secondary data entail data that was collected by other people, which may assist as a

reference to complement the primary data.

## 2.2 A general background of the voluntary professional associations and the history of SAIEE.

Makuriwa (2014), Zdanovskis and Pilvere(2016) classify the institutions or organisations into three categories or sectors.

- ❖ Sector 1 – Government institutions
- ❖ Sector 2 – Business and profit-making institutions
- ❖ Sector 3 – Any institutions that do not belong to sector 1 and 2, are categorised in this 3rd sector. As per the classification, SAIEE is operating within this sector.



Figure 2.1 The third sector (adapted from Makuriwa (2014))

The United Nations (UN) handbook (2003) identifies five structural or operational features of the voluntary professional associations:

- ❖ Associations are legally registered, for the creation of public goods and value,
- ❖ Associations are prohibited from the distribution of any profits to stakeholders and shareholders,
- ❖ Associations can establish their own general policies and procedures,
- ❖ Participation in the associations is uncoerced and requires individuals' consent to participate in activities, and
- ❖ Associations operate outside the sphere of government, hence the adoption of the word third sector.

Makuriwa (2014) defines the third sector on the premise of fundamental principles of voluntarism and at the same time tapping into both the government and business principles/support to advance the agenda of contributing to social, economic and political wellbeing. The third sector plays a crucial role in strengthening the role of both the



business sector and government sector and they are fundamentally structured into formal, private, non-profit distribution and self-governing. Drawing on the UN's international classification of non-profit organisations (ICNPO), SAIEE falls under Group 11 (Business and professional associations, unions) subgroup 200 (professional associations); United Nations (2003:39-40).

*Table 2.1 International classification of non-profit organisations*

International Classification of Non-Profit Organisations Table	
Groups	Groups Subgroups
1. Culture and recreation	1 100 Culture and arts
	1 200 Sports
	1 300 Other recreation and social clubs
2. Education and research	2 100 Primary and secondary education
	2 200 Higher education
	2 300 Other education
	2 400 Research
3. Health	3 100 Hospitals and rehabilitation
	3 200 Nursing homes
	3 300 Mental health and crisis intervention
	3 400 Other health services
4. Social services	4 100 Social services
	4 200 Emergency and relief
	4 300 Income support and maintenance
5. Environment	5 100 Environment
	5 200 Animal protection
6. Development and housing	6 100 Economic, social and community development
	6 200 Housing
	6 300 Employment and training
7. Law, advocacy and politics	7 100 Civic and advocacy organizations
	7 200 Law and legal services
	7 300 Political organizations
8. Philanthropic intermediaries and voluntarism promotion	8 100 Grant-making Foundations
	8 200 Other philanthropic intermediaries and voluntarism promotion
9. International	9 100 International activities
10. Religion	10 100 Religious congregations
11. Business and professional associations, unions	11 100 Business associations associations, unions
	11 200 Professional associations
	11 300 Labour unions
12. Not elsewhere classified	12 100 Not elsewhere classified

Source: United Nations (2003:39-40)

### **2.3 The history of SAIEE within the context of electrical engineering**

As Mikerov (n.d) highlights, electrical sciences have been present since the 18th century. The strides of interventions made by different scholars, such as P Mushenbrock by means of a laden jar, B Franckline through the invention of a lightning rod, C Coulomb who invented coulomb's balance and by A Volta whose interest and interventions were

in Volta's cell, condenser, electrometers, indicate that the electrical engineering discipline has been explored for the past two centuries (Burkov et al.,2021, Atherton, 1984). In academia, higher institutions of learning started offering electrical engineering as a course around 1882 at the Massachusetts Institute of Technology (MIT), followed by other institutions such as Cornell University and Drexel University which initiated the course in 1883 and in 1903, respectively (Terman, 1998). Popescu and Popescu (2018) corroborate with Terman (1998) in that the major evolution in electrical engineering education was experienced in the 19th century. SAIEE was formed in February 1909, and an agreement was made for this institution to be a national body (to support all South African provinces) even though the bulk of the representation was from the Witwatersrand in the Transvaal (SAIEE, n.d). The objectives of this institution, amongst others were the general advancement of electrical science and the implementation of a technical library and modern laboratory for the purpose of promoting research in electrical science. On the 11 August 1910, a student section of SAIEE was formed. The culture adopted by SAIEE has been that of monthly meetings, industry visits, annual dinners, annual general meetings, and yearly appointment of SAIEE president. In the decades following its creation SAIEE grew through the establishment of regional centres (Western Cape (WC), KwaZulu Natal (KZN), Eastern Cape (EC) etc.) while different fields of electrical engineering (heavy, light, rotating machines, etc) were separated over the years. Besides working closely with the Engineering Council of South Africa (ECSA), SAIEE strives to provide leadership to the electrical/electronic engineering discipline to support its members in becoming more effective practitioners and to improve the quality of life of all South African communities (SAIEE,n.d). Working with the industry has assisted SAIEE to identify the gaps that need special attention, and new chapters have emerged, namely telecommunications, cybersecurity, energy storage. As Atherton (1984) highlights, new applications and technologies of the future include intelligent materials, electrical and hybrid cars, smart and passive houses, Alternative Current (AC) and Direct Current (DC) smart grids, smart cities, internet of things (IoT), and the development of renewable energy sources. These will require stakeholders in the electrical space to support the development, standardisation, and upskilling of resources.

#### **2.4 The role and functional areas of voluntary professional associations**

VandenBos (2015) defines an association as group of individuals who gather for some

common purpose. Dixit (2016) views the role of VPAs as promoting the interest of the profession they operate in, and that of its practitioners. The core functions of any VPA depend solely upon the particular purpose for which it was formed. Different professions such as medicine, information technology, teaching, librarian, electrical engineering. have different VPAs that support them. For example, SAIEE is one of those associations that support the electrical engineering. VPAs play a crucial role as they indulge in many activities which can develop the skills of the professionals through for example, seminars, conferences, refresher courses, short term courses and training programs (Davis, Radohl, Humphrey & Benorden, 2020). Enrolling in a professional association, not only uplifts the individual professional but also the entire profession. Brito et al. (2018) stress the need for professionals to be updating their knowledge and skills to keep up with the innovations and high technology applications. This is done to keep up with the developments in the world, hence the role of VPAs like SAIEE in always offering courses and seminars to their members. The fact that disruptive technologies like the 4<sup>th</sup> Industrial Revolution (4IR) are shaping the economy and that it is expected that thousands of people will be laid off jobs when it is applied, education programs are therefore expected to change to prepare for more productive professionals (to adapt, reinvent and pursue prospects). Innes, Cope and Young (2020) view the VPAs as the voice of the professions to the public. VPAs are perceived to promote their professions and improve the quality of the members' working conditions. Burritt, Guthrie and Evans (2016) acknowledge the potential VPA membership benefits which include the negotiation of favourable professional indemnity, insurance rebates, access to research libraries and technical databases and professional development and career improvement. Factors influencing whether one joins the VPA range from developing the profession, developing personal practice, reputation of the VPA and intra-professional communication. Holm, Slutz-Tanenbaum and Greene (2020) expand on the role played by professional associations to also provide opportunities for continuing education, social networking and access to benefits which promote member engagement. The student chapters of the professional associations help with leadership skills, instill professional values, creates networks for employment opportunities, internships, scholarships, and enhances connections with leaders in the field. SAIEE is no different, it also has its own student chapter at different universities in SA. The student chapter is also expected to provide role modelling and mentoring to reinforce students' socialisation, engagement and development of professional values (SAIEE,n.d). A positive relationship exists between personal

satisfaction and engagement in professional membership. Members who were actively involved reported satisfaction and values that they have received from their membership to professional associations as these have further motivated their commitment. Member engagement reinforces and strengthens perceptions about the benefits of the organisation, provides access to professional knowledge and ties to the social group and establishes more reliable connections with professional associations.

The fact that membership or affiliation to different professional associations creates and enhances social ties, individual professional development, and networks among people, this supports the point made by the systems theory which is seen as means to explain the dynamic relationships and their interdependences, especially at the level of environment and humans (Lai & Huili Lin, 2017). Through the Systems Thinking Framework (STF), Barnes, du Plessis and Frantz (2021) acknowledges the career development and progression as interdependent and complex systems where the intrapersonal system of the individual, the social system and the environmental–societal system interact.

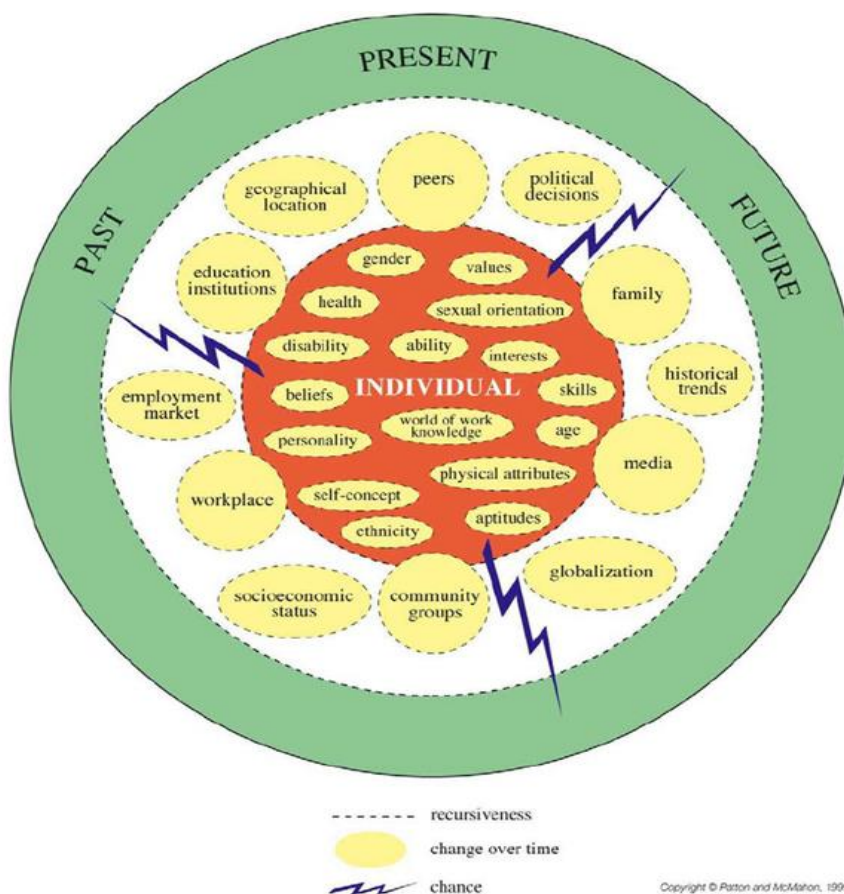


Figure 2.2 Systems Thinking Framework (STF) adapted from (Barnes et al., 2021)

As depicted in Figure 2.2, the core of the STF consists of the individual. Within this system, a range of intrapersonal influences (elements) such as values, personality, interests, disability, and sexual orientation are included. The individual system affects the decisions electrical engineers make on whether to take up membership of the VPAs and actively participate in the interventions. As individuals do not live in isolation, the individual system of influence is connected with influences that comprise the individual's social system as well as the broader environmental/societal system. This societal system includes family, peers, and schools and the broader environmental-societal system that includes influences such as globalisation, socioeconomic circumstances, and geographic location. Patton and McMahon (2006) highlight the dynamic nature of career development through the interaction of the three processes mentioned above. Recursiveness is a central construct of the STF and it describes the interaction, the multi-directionality of influence, as well as the relationship between all the systems, bearing in mind that the individual system, along with the contextual subsystems, are open systems and consequently permeable to influence (Barnes et al., 2021). Change over time process happens at the macro level and it relates to processes such as career decision-making. The third of the process influences is chance, the random occurrences that may irreversibly change the life and career of an individual. The STF depicts the complexity of the systems within which individuals make work and learning related decisions. It is a crucial element to form an opinion because it recognises the role individuals play in shaping their career development. The STF may be personalized in practice and individuals may include influences of their own choosing. All systems of influence are located within the context of time since the past influences the present while both the past and the present inform the future. As electrical engineers look at the career projections and prospects of their future endeavours, they critically evaluate their decision to continue being members of SAIEE.

The importance of education cannot be underestimated in any profession and voluntary professional associations have a contribution to make change and improvement in this area. Bandius and Sharma (2015) claim that voluntary professional associations remain relevant to its members if they are providing them with further education, training opportunities and career advice. In other words, they are deemed to provide continued professional development (CPD). As Sturges (2015) points out, CPD are seen as means by which individual professionals take responsibility for expanding and updating their

knowledge and skills. CPD initiatives provide the required tools to enable the process of education and training of professionals, which is recognised as a necessity for building skill-sets and maintaining relevance in the profession. CDP activities include workshops and seminars, short courses, and researching and writing papers. Voluntary professional associations not only offer courses and seminars in these areas but advise and mentor aspiring professionals. Torrecilha (2014) emphasises the importance of mentorship for one's career development, especially for early years of a profession. Typically, mentoring programmes offered by voluntary professional associations are in the form of one-on-one support to new graduates transitioning to the workforce. As Wareing et al. (2017) observed, the majority of regulatory bodies stipulate that professional participate in a minimum number of credits or hours of continuing professional development (CPD) points. This is not different in the South African context because the regulatory body of the Engineering Council of South Africa (ECSA) requires a portfolio of evidence every 5 years from registered electrical engineers. SAIEE offers courses and seminars that have CPD accreditation to assist the electrical engineers with ECSA compliance. Surg (2016) argues that to create the best learning systems for professional development, there must be collaboration between academic institutions, professional associations and industry. A growing trend has been witnessed by Sabini and Muzio (2017) where voluntary professional associations partner with the academic institutions to offer CPD accredited courses. These courses are either independent or part of a university qualification. Voluntary professional associations such as SAIEE in this instance are expected to assist with this process of offering CPD and enabling professionals to acquire the points. Also, they advise and mentor aspiring professionals. Nesbit and Gazley (2011) view the role of voluntary professional associations to be: educating, training and providing credentials to professionals in their respective operational fields which is the case with SAIEE.

## **2.5 Factors underlying people's affiliation to professional associations: Motivation**

Mario (2019) and Bergh and Geldenhuys (2014) define motivation as any factor that incites a person to achieve goals while Li and Barbieri (2019) view it as a psychological process that drives individuals' actions towards certain goals or behaviour. In simple terms, it is those aspects that push or pull humans towards a definite behaviour and make them avoid other forms of behaviour. This applies to the decisions taken by electrical engineers to take up membership with SAIEE. The available body of literature expands on motivation based on different theories and frameworks. Velmurugan and Sankar

(2017) enlists the main motivation theories as Maslow's hierarchy theory, two factor theory (Hertzberg), Alderfer's Existence, Relatedness and Growth (ERG) theory, acquired need theory (McClellan), cognitive evaluation theory, equity theory, reinforcement theory and expectancy theory (Vroom), to name a few. Motivation varies across individuals in terms of orientation and intensity and Li and Barbieri (2019) indicate that it is dichotomised as intrinsic or extrinsic. Intrinsic motivators satisfy an individual's innate psychological need for competence and autonomy, while the extrinsic motivators are the set of material rewards or hidden interests that individuals seek. The intrinsic motivators for electrical engineers to be members of a VPAs like SAIEE may range from socialisation, attaining certain skills and expanding knowledge. The extrinsic motivators for electrical engineers to be members of a VPAs like SAIEE may range from CPD points or credentials, recognition and career progression.

Emotions play a major role for a person to be motivated to act. Sternberg (2001) discusses the forms of motivation which psychologists categorise as physiological (biological), clinical and cognitive. He further discusses motivation theory from the perspective that the needs of individuals shape the ways in which they are motivated. These are the needs for achievement, power, and affiliation which affect the actions of people although they may be different for different individuals. Sternberg (2001) also lists the Maslow's Hierarchy of needs which consists of five levels of needs for individuals (self-actualisation needs, esteem needs, love and belonging needs, safety or security and physiological needs). The self-determination theory of motivation further explains the various intrinsic and extrinsic factors that support personality development in order to improve the well-being and performance of people in organisations and society at large (Mario, 2019). Note that the motivation theory is very significant to this study which aims at examining factors underlying electrical engineers' (non-)affiliation to professional associations as it will shed lights on whether electrical engineers are either or not motivated by some of the needs identified above in order to join and participate in the interventions of SAIEE.

As Li and Barbieri (2019) stress, membership to associations can be perceived as a capital onset investment because individuals join and stay if the benefits they receive outweigh the costs. In other words, membership recruitment and retention are dependent on the extent to which the VPA fulfils members' motivations and the levels of satisfaction

with the services provided. Members depend largely on their ability to improve their careers by selecting benefits that support their career paths. Note that the logic of membership comprises a set of incentives (private and public) that members seek when deciding to join a given VPA (Li & Barbieri, 2019).

The logic of service is defined by Li and Barbieri (2019) as those amenities, also termed private incentives, that associations offer to respond to members' individual requests and enquiries. Private incentives are listed as yielding economic, informational, and occupational benefit resulting in an increase in members' revenue, access to professional contacts and data services. The logic of influence is defined by Li and Barbieri (2019) as those actions, also termed the public incentives, that associations undertake on behalf of most of their member's interest. These are listed as lobbying and normative expectations as they entail sets of professional standards and developing policies that affect the electrical engineering field.

Ladue (2021) suggests that the expectancy-value theory (EVT) of motivation be used to clarify and predict attitudes towards objects and actions. EVT later evolved to be understood as what persuades individuals to achieve their goals. The theory answers the question: Why do we chose the paths we do? Why do electrical engineers take up membership of VPAs? The EVT has been instrumental in understanding what persuades individuals to achieve goals. This is critical in understanding the choices that are made by people. The application of EVT in choices made by people is based on the person's expectations and the value (worth) of the choice. EVT is relevant to understand if the expectations are met when deciding to join SAIEE and participate in its interventions.

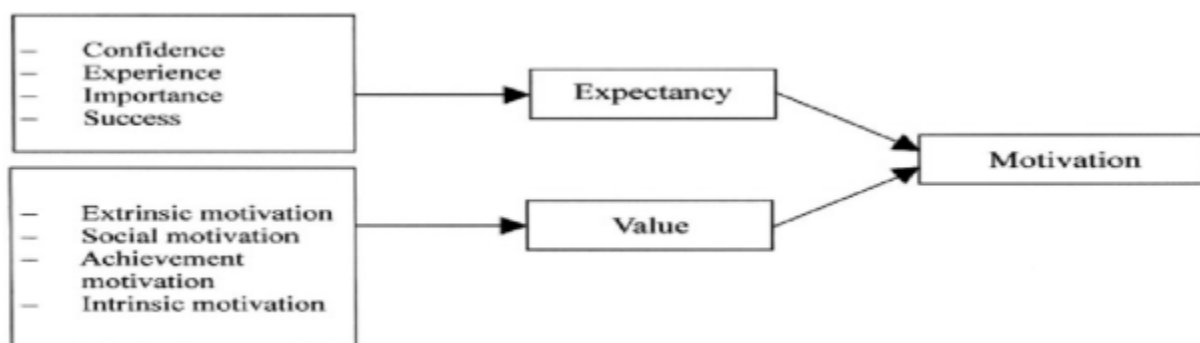


Figure 2.3 Expectancy–Value Theory of Motivation adapted from Ladue (2021)

Wotherspoon and McCarthy (2016) emphasise a position that is echoed in social



exchange theory by Coon and Mitterer (2013), stating that professionals weigh the cost of membership to the voluntary professional associations against the perceived benefits and will only pursue those relationships where the rewards are maximised and their costs are minimised. The social exchange theory of relationships will be applied in this study to explore whether there is a link between the cost of attaining membership of SAIEE and the benefits that come with membership, attendance and participation in the interventions of the association. Wang and Ki (2018) assert that members' participation in voluntary professional associations is motivated by the public incentives that these associations offer. This could be through a personal desire to gain prestige by donating to the associations or alternatively through volunteering and personal commitment which is a display of commitment to the profession. As McCroskey and O'Neil (2010) describe, professional commitment is a very crucial attribute that may stimulate people's increased chances of membership to the voluntary professional associations and desire to volunteer within communities. The fact that human beings are diverse, with different personality traits and values, the identification of "what motivates human beings to do what they do" is a complex process hence the need of this study which aims at seeking answers that question, in relation to the decisions that have to do with membership and participation in the SAIEE.

## **2.6 Participation, commitment and involvement**

The Encarta World Class English dictionary (1999) defines participation as the act of taking part in something. As Berger (2014) highlights, voluntary professional associations promote the participation of their members through for instance various forms of interventions that may take place on the internet, television, YouTube channels and Webinars.

Juevesa, Juevesa and Castino (2021) define commitment as the degree to which the person feels devoted to stay in a course. Additionally, it is the willingness and the desire to positively contribute to the success of the cause. Note that internet is widely used to create quality resources and shared content for the members. As Wang and Ki (2018) argue, members' participation in voluntary professional associations may be categorized into two, namely volunteering and donations to the association. In the case of SAIEE, members may participate by attending free monthly lectures, free webinars, or paid courses, or by serving in the regional SAIEE committee and offering mentorship services

to new members of SAIEE (2017). Coppin and Fisher (2015) argue that the shared identity of participating in a voluntary professional association provides opportunities to strengthen social and professional networks which may lead to further career advancements.

Holm, Slutz-Tanenbaum and Greene (2020) argue that the factors that influence students/professionals to join and participate in professional associations are critical to extend engagement after graduation. Additionally, these authors (2020) identified two theories that are relevant to the subject of engagement in professional associations, namely the exchange theory and the membership value theory. In the exchange theory, members weigh the benefits relative to the cost of membership. In other words, according to this theory, the perceived benefit of becoming a member should outweigh the cost. Membership value theory entails the ability of an organisation to meet the needs of its members because member's satisfaction predicts renewal as this is based on excellent customer service and tangible benefits from professional organisations.

As far as commitment is concerned, McCroskey and O'Neil (2010) identify the existence of a voluntary professional association in an industry as a way in which the professionals exhibit commitment to growth and participate in their respective professions. An important factor in the electrical engineering profession is to keep abreast of research and developments in the electrical engineering industry, seek professional and personal development, improvement of work, advancement of the profession, and policy developments. Also, Yang and Taylor (2014) argue that professional associations play a powerful role in enhancing social bonds and networking among professionals who participate in their monthly events, especially the new entrants into the field of work. This is visible in the way SAIEE conducts its monthly lectures. There is always an hour set aside for those attending free lectures to mingle and interact. This serves to open up space for attendees to socialise and share contacts and build networks. Members of voluntary professional associations, as in the case of SAIEE may be assigned formal and informal functions such as serving as board and committee members, organizing professional meetings, serving on technical committees, recruiting and training other members and preparing standards and practices for their respective industries. The study investigated as well the extent to which these factors influence the participation of electrical engineers in the interventions offered by SAIEE or motivate them to take up

membership. As Davis et al. (2020) assert, the focus on membership inclusion, commitment to justice and equity for current and future members, and retention of existing members is essential for the stability of the organization as this results in its success. Understanding the reasons why professional and student electrical engineers join and stay within the SAIEE is essential for the organisation's relevance, inclusionary practices, and direction.

From the literature, one can determine that voluntary professional associations, like SAIEE in this instance, play a major role in the training and development of professionals even though the decision to take up membership and participate in the interventions rests solely with the individual. The literature dwelled mainly on international voluntary professional associations and the common fields investigated were mainly information technology, education, library, health and sports. There was no evidence of studies found within the South African context, especially the electrical engineering field. This indicates that there is a gap in the South African literature in terms of studies on voluntary professional associations in the electric engineering industry notwithstanding the role that the results of these studies may to assist similar professional associations.

With respect to involvement of people within professional associations these are also shaped by different factors. For example, as Rue and Byars (2005) highlight, the two approaches that people consider for decision making include an intuitive approach and a rational one. In business decisions, a rational approach is mostly encouraged. In personal situations, considering one's intuition and feelings is a highly recommended decision-making strategy. Both strategies seem to be major contributing factors for the electrical engineers who decide to participate with SAIEE and those who decide not to.

As Walsh and Daddario (2015, p.116) state, "choosing affiliation with a certain VPA is usually based on the perceived instrumental and expressive attributes of benefits offered to the prospective member". Note that instrumental benefits are defined as the factors which provide tangible benefits such as information exchange, access to association resources and network contacts. Professional associations are pivotal in locating resources to support peer research projects and resource exchange, especially in the academic community. VPAs hold a lot of conferences that are very informative to electrical engineers, and conduct regulatory work related to certification and

standardisation of the profession. These are some of the reasons why professionals join the associations. In addition to this, Cline, Curtin and Johnson (2019) highlight that network contacts and social interactions may as well shape peoples' (non)affiliation to these associations. Thus, during early stages of career development, it is important for associations to promote instrumental benefits related to career advancements in the professions even though the reputation of the professional associations counts as well. Li & Barbieri (2019) perceive membership to an association as a capital asset investment because individuals join and stay with professional associations if the benefits they receive outweigh the cost. In other words, membership recruitment and retention are dependent on the extent to which the professional association offers satisfactory service. Professional associations depend largely on their ability to improve their performance by enhancing individual benefits.

## **2.7 Value proposition**

Evans (2002) defines value as the ratio of perceived benefit to perceived cost and further elaborates on two approaches that measure customer value. The first approach seeks to identify the value perceived by customers of the organisation's goods or services. To put it in the context of this study, the value perceived by the electrical engineers who are seeking services from SAIEE. When the perceived value is higher or better than that of the competitors then the service provider is bound to succeed in the marketplace. The second approach measures the value that a customer brings into the organisation and this is used as the basis for targeted marketing campaigns. By analysing their membership, SAIEE will be in a position to market their services better. Any business that sells goods and services, has a business model, which is defined as the way an organization creates, delivers, and captures value (Sjodin et al, 2020).

Allen, Ng and Wilson (2002: 111) bring forth fundamental differentiation between the terminal values and instrumental values. Terminal values are defined as beliefs about end-state, and these include for instance freedom, comfortable life, mature love whereas instrumental values are described as beliefs about desired mode of action such as being independent, ambitious or being honest.

In order to help businesses or service providers to be sustainable and offer better services in their field, Lahti, Wincent and Parida (2018:13-14) proposed different

questions that are to be answered to capture the value:

- ❖ What kind of value is to be created and for whom?
- ❖ How and by whom is the value created and delivered?
- ❖ How much value is to be created for each stakeholder?

The process of value capture is described by Sjodin et al. (2020) as a process that ensures that the value created is greater than the cost of realising that value and that the value surplus is distributed fairly among stakeholders (customer and service provider). The birth of the saying “The customer is king”, dates back to the early 1990s and is viewed as the basis for customer value management, and this phenomenon has been a crucial point in marketing literature (Daniels, 2000). As Vega-Vazquez et al. (2013) assert, customers are more informed and educated, more selective and demanding and have a wider selection of service providers to choose from. This is visible in the number of VPAs that are supporting the electrical engineering field in SA of which SAIEE is a member. Hence the customer of the 21<sup>st</sup> century demands greater value generation from the service provider through the value co-creation process, implying the need for joint value creation between the supplier and the customer. The collaboration between SAIEE and its members would endure great value in services the customers receive from SAIEE.

The fact that not everything can be deemed valuable for everyone, Matthes (2015) discusses among other things, whether the value of some things is universal or particular to an individual. This concept is further expanded through personal universal values. As Daniels (2000) explains, customer value management system (CVM) and its utilisation to enhance customer satisfaction not only measures customer satisfaction, but also the perceived value (perceptions of customers) hence the need for businesses to shift from selling products to selling outcome-based services (Sjodin et al., 2020). To define the value proposition, the customer and service provider work jointly to achieving alignment between identifying value creation opportunities and agreeing on value distribution (Sjodin et al., 2020).

## **2.8 Conclusion**

This chapter looked at the background of the professional associations and that of SAIEE by clarifying how SAIEE fits in within the VPAs. The development of the electrical engineering and the role that SAIEE plays in supporting the industry and the electrical

engineers were also discussed in this chapter. The function of the VPAs and the role it plays in the electrical engineer's career progression was also addressed. The chapter further discusses the SAIEE's student chapter, and the role it plays in pipelining the membership of SAIEE. The critical roles that a professional association plays in newly qualified and senior professionals were discussed at great length. Motivation theories, decision making to associate with professional associations and commit to being active members of the professional associations was also discussed. The next chapter will look at the methodology and design that was used to shape up the research.

## CHAPTER 3 RESEARCH METHODOLOGY AND DESIGN

### 3.1 Introduction

The previous chapter reviewed the accumulated body of knowledge and how it offers various meanings associated with voluntary professional associations (VPAs), role the VPAs play in particular sectors, how they function and the value such as continued professional development that they offer to their members. This chapter expands on the research methodology and design that were adopted in this study. By so doing, it discusses the mixed method approach and justifies why it was chosen as a suitable method for this study. The current chapter also contains an in-depth discussion of how the research instruments were selected, and how the data were collected, specifically looking into the following areas:

- ❖ Pragmatic research paradigm
- ❖ Convergent mixed methods
- ❖ Study population
- ❖ Sampling techniques
- ❖ Data collection instruments
- ❖ Data coding and analysis and,
- ❖ Design rigour

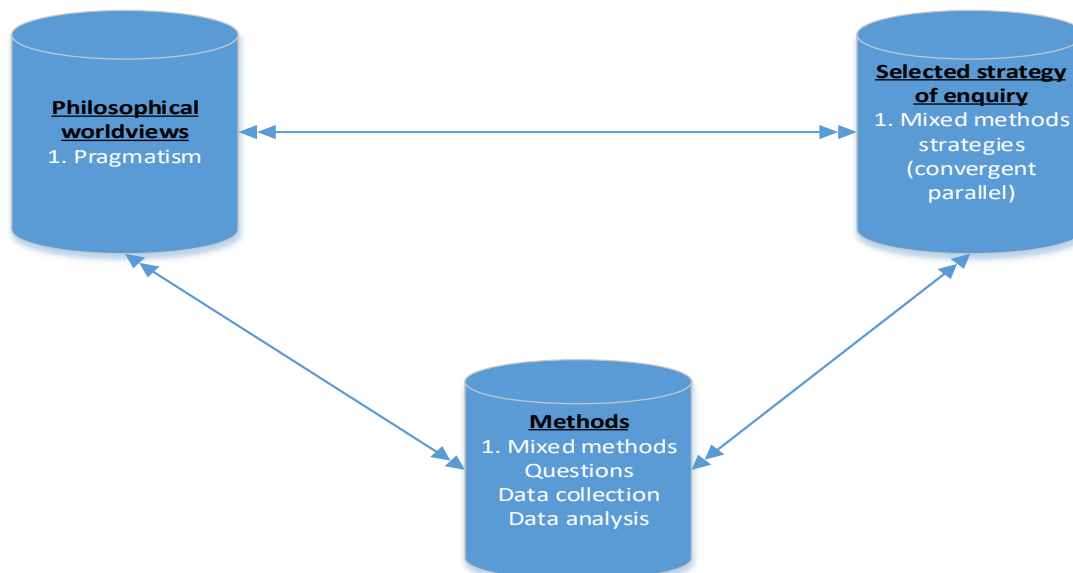


Figure 3.1 Framework for the research design

Figure 3.1 shows the research framework adopted in this chapter.

### 3.2 The research paradigm

Tracy (2013) refers to the research paradigm as the various ways of understanding the social reality (also named a framework or worldview). Research paradigms expand on how knowledge is gathered and built up about the world, based on the researcher's view and interpretation of the world they live in (Kivunja & Kuyini, 2017). Tracy (2013) further asserts that different researchers take different stances on the basis of ontological position, epistemology, axiology or methodology when conducting research. Terreblanche, Durrheim and Painter (2006) define ontology as the nature of reality that is to be researched. Therefore, the ontological position of this research was the pragmatism approach because it is believed that reality consists of people's experiences that are perceived to be both objective and subjective. The pragmatic view recognises that there are different ways of interpreting the world and undertaking research, and that there is no commitment to a single point of view of reality. The pragmatic research paradigm is flexible, and the researcher believes works best in answering the research questions of this study. There may be multiple realities of experiences of the electrical engineers in Western Cape (WC), and the focus of the research is mainly on what works practically to uncover the truth about their feelings and opinions to [not] take up membership and [not] participate in the interventions of the VPAs. As Bryman (2004) argues, humans generate knowledge and meaning from an interaction between their experiences and their ideas.

Creswell and Creswell (2018) echo the point that a pragmatism worldview is borne out of actions, situations and consequences. The research focuses on the problem and uses all approaches possible to understand and seek solutions (Creswell 2009). Leavy (2017) suggests that pragmatic researchers put more emphasis on the research problem and ensure that they use all available resources to understand the problem.

The different electrical engineers have different experiences from different electrical fields such as computer engineering, systems engineering, power engineering, telecommunications, radio-frequency engineering, and so forth. The research took place in the social world, as it involved answering why people chose to do what they do. The study also examined the decision making process of the electrical engineers in the WC, pertaining to why they took up membership and participated in the interventions of



SAIEE. The pragmatic approach supported the mixed methods design, which was found to be more suitable for this study.

### **3.2.1 Pragmatic approach**

Combs et al. (2021) view pragmatic research as an evolving process that requires multiple skills in engagement and communication as well as having the ability to be adaptive and resilient. Ramos (2019:13) defines the pragmatic approach as looking at the importance of something based on its functionality in each situation. This design approach focuses on exploring new emerging situations and responding creatively with an intervention to establish appropriate or meaningful solutions. Auernhammer (2020) argues that with the pragmatic approach, knowledge needs to be useful for problem solving and action. The pragmatic approach entails examining and understanding the problem context and also the impact of a decision or action. Hai-Jew (2015) describes the method and philosophy used in the pragmatic as combining the insights provided by qualitative and quantitative research into a workable solution. As Hesse-Biber (2017) highlights, a pragmatic approach allows the researcher to ask pertinent questions to attend to the research problem. Pragmatism is not concerned with the epistemological perspective but with the best method for answering questions hence the application of a range of methods that best meet its needs and research purpose. A pragmatist will engage the subject of inquiry from all possible scenarios, while using all available tools to fully answer the research questions. Pragmatic research aims for a better, richer experience of research which is founded on the belief that all actions are seen as more or less right. Hesse-Biber and Johnson (2015) propose that humans are aware of the things that are good for them, and therefore bases all judgements on this premise. Knowledge gained is linked to intentions and actions. Pragmatism defines the truth in relation to a particular goal and in a particular context. The various research actions applied in pragmatism to assist in understanding the topic are observing, interpreting and measuring. Hesse-Biber and Johnson (2015) further assert that the pragmatic paradigm supports a mixed method based on the assumption that there is not one set of methods that is appropriate, the criteria for choosing methods include what method fits with the evaluation questions. Hesse-Biber (2017, p. 335) suggests that “if a method fits the question, then use it”.

*Table 3.1 Philosophical assumptions of the pragmatic paradigm*

Assumption	Beliefs
1. Axiology	Gains knowledge in pursuit of the desired ends and societal improvement as influenced by the evaluation's value and politics and experiences.
2. Ontology	Reality is continually created through experience in interaction and transaction with the "world".
3. Epistemology	Ideas and knowledge are evaluated according to their consequences, the gold standard evaluators can meet is warranted assertability and provisional truths about situated evaluands.
3. Methodology	Match methods to questions, mixed methods.

Oxford handbook (2015, p. 437)

The pragmatic paradigm is chosen because it provides a basis for the mixed method approach, quantitative and qualitative, without needing to give more attention to ontology and epistemology.

### **3.3 The research methods**

Hesse-Biber (2017) defines the research method as a technique chosen when gathering research evidence and Creswell (2009) expands on the research methods to include the various forms of data collection methods used, analysis and interpretation thereof. Aligning with the pragmatic worldview in section 3.2, the study employed the mixed method approach with the sole purpose of achieving completeness through the qualitative component of how people feel and behave which compliment the quantitative component which consists of determining various factors that influenced respondents (not) to take up membership and (not) to participate in interventions organised by SAIEE. As Leavy (2017) and Creswell (2009) suggest, the mixed methods research ties in with the pragmatism approach mentioned in the research paradigm. Pragmatism supports both qualitative and quantitative methods, which opens doors to multiple methods that can be deployed in one study, different forms of data collection and analysis. Using the two methods in this study ensured that the strengths of both the qualitative and

quantitative methods increased the scope and depth of the study. As Blickman and Rog (2009) state, that the mixed method study brings forth completeness to the research, which ensures a richer insight about the electrical engineers' feelings and perceptions about joining and participating in SAIEE interventions. This linked all methodological decisions centrally to the research question. From the three primary types of mixed methods, namely sequential, convergent, and nested mixed methods, this study deployed the convergent parallel mixed method design. As depicted in figure 3.2, this design consists of merging both the quantitative and qualitative data in order to answer the research questions of the study conducted (Creswell, 2014). Both forms of data were collected, analysed and integrated to compliment the findings from the individual methods, while trying to answer the research questions.

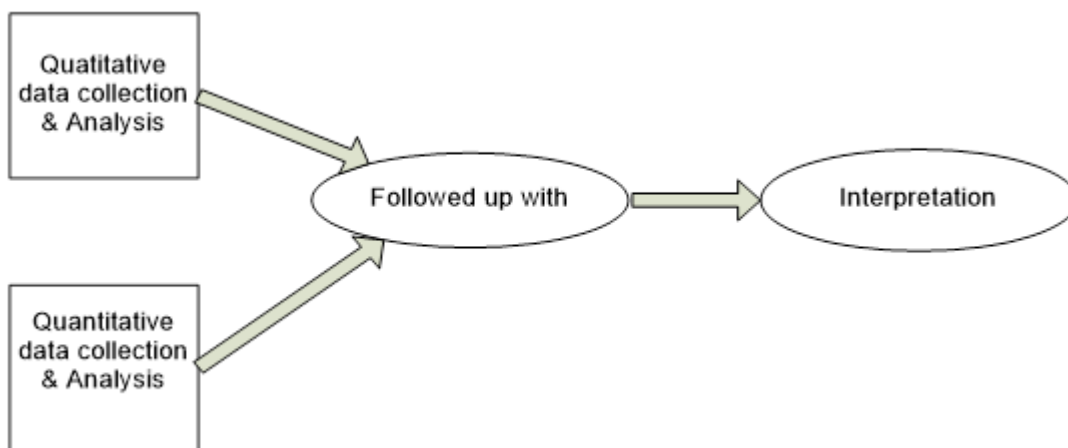


Figure 3.2 Convergent Parallel Mixed Methods Design

Source: Adapted from Creswell & Creswell (2018, p.352)

The literature reviewed has shown that studies that have been done on the voluntary professional associations and third sector area were mainly quantitative in nature. This may be attributed to the size of the target population, which was observed to be in thousands and hundreds of thousands, making the quantitative method more suitable. These studies were also done for multinationals, across borders and incorporating different professional associations in each study. Unlike most previous studies, this research concentrated on one voluntary professional association, SAIEE, to narrow down the research problem. The convergent parallel mixed method contained online survey questionnaires and focus group interviews. The benefit will be the generation of data that cannot be obtained if a singular method were to be employed. There is no valuable data

that explains why people attend or do not attend the interventions in the WC. The focus groups expanded and built on the results of the online survey to uncover the people's feelings and opinions about taking up membership and participating in the interventions organised by SAIEE. The benefit will be the generation of data that cannot be obtained if a singular method was to be employed since there was no valuable data that explained why people attend or do not attend the SAIEE interventions in the WC.

### **3.4 The research design**

Kothari (2004) defines research design as the conceptual structure and logical sequence within which research is conducted. A good research design is characterised by flexibility, efficiency and minimal bias. Akhtar (2016) lists four types of research designs that can be explored in social studies as exploratory, descriptive, explanatory and experimental. The most relevant design for this study was the descriptive research design, which assisted the researcher to describe the findings. This research design is suitable for a study that describes the current situations, social events, social structure and social situations. As Akhtar (2016) re-iterates, a descriptive design may be concerned with the attitudes or views (of a person) towards any occurrence or phenomenon. Thus, it was an appropriate choice to determine the attitudes of electrical engineers towards affiliating with the voluntary professional association, SAIEE and what drives them to either or not attend the interventions of the association. In descriptive studies, the researcher is required to have a clear-cut definition of the population and in this case, it was electrical engineers in the WC.

### **3.5 The research methodologies**

#### **3.5.1 Population**

Leavy (2017) and Kumar (2011) define the population as a set of all individuals from which a sample or data of interest which the research study is focusing on will be selected. The population entailed all registered electrical engineers residing in the Western Cape, which amounted to 800, whereas our sample included those research participants who provided answers to the research questions of the study. Note that the results from the study may be generalised based on the size of the chosen population and of the sample. In this study, the unit of analysis or the sample consisted of individual

electrical engineers who reside and work in the WC and was drawn from electrical engineers who are registered members of the SAIEE in the Western Cape as well as those who are non-members. Due to the recently introduced Protection of Personal Information Act (PoPIA) 2013, in South Africa(SA), SAIEE was unable to share the email addresses of its members with the researcher.

### **3.5.2 Sample method/technique and sample size**

Kumar (2011) defines sampling as the process of selecting a few number of people or entities from a bigger population and making this the basis for estimating or predicting the behaviour of the whole population. This research study targeted two groups namely, the electrical engineers that are members of the SAIEE and electrical engineers who are non-members. There was no sample method used for the SAIEE members, due to aforementioned limitations of the PoPIA. To reach those electrical engineers who are non-members of SAIEE, a snowballing non-probability sampling method was used). Leavy (2017) describes the snowballing method as an appropriate and convenient option of reaching participants that are well connected, as with the case of some electrical engineers that are non-members of SAIEE were reached through those who are registered as SAIEE members. In other words, the researcher relied on participants and all other persons in a position to assist to refer their colleagues and connections and any electrical engineers in the Western Cape who were not registered with the SAIEE. This method was convenient for sharing the survey with non-members of SAIEE. Snowballing sampling was chosen because there was no known database of the electrical engineers in the WC that are non-members of SAIEE. The researcher could only rely on networking. A mathematical calculation to determine an appropriate sample size was calculated based on the standard formula that takes into consideration "the margin of error of 5%, the population proportion of 50% and the confidence level of 95%" (Struwig & Stead, 2001, p.120). This equated to a sample size of 300 elements of the population. A sample size of 128 was used for snowballing, based on the assumption that each person will share with one person targeting a sample size less than half of the elements of the population.

The focus group audience was sampled by using the purposeful sampling method. Kumar (2011) and Leavy (2017) assert that a researcher is allowed to judge who can provide the best and meaningful information for the study. There was no conflict of

interest and bias since the samples for the focus groups were chosen with the intention of producing the best information-rich data in order to address the research questions. The best cases identified for the focus groups were those electrical engineers who have been diligently attending the SAIEE interventions in the past years and those that are known to be non-members of SAIEE.

### **3.5.3 Data collection instruments**

Primary data collection instruments used in this study comprised of both online questionnaires for the online survey and in-depth online focus group interview questions. Secondary data was collected by means of available literature, particularly from electronic academic journals and textbooks. A standardised self-administered questionnaire with a mixture of both open-ended and closed-ended questions was used for the online survey. In order to measure the attitudes and perceptions of the respondents of the closed ended questions, the researcher adopted an attitudinal scale type named the 5 point Likert-type scale that was recommended by Struwig and Stead (2001). To add more depth to the results of the online surveys, focus group interviews were administered. Due to Covid-19 restrictions and country regulations, the researcher opted for an online synchronous focus group using Microsoft (MS) Teams. Fick (2018) defines the synchronous focus group as one where the participants join the online meeting concurrently to achieve a real-time interaction with each other. The group was chosen from electrical engineers who are members of SAIEE and those that are non-members. Leavy (2017) describes how focus groups use conversations in group settings as a means of sharing perceptions on a defined area of interest. People are naturally conversational, and so the focus group interview method draws on something people are accustomed to. The pre-testing of the questionnaire was done in a selected electrical engineering firm situated in Durbanville to a targeted population of 15 persons. This assisted the researcher in identifying problems that the potential respondents might have in either understanding or interpreting the questions. Any ambiguity in the wording of the questions was identified and rectified.

### **3.5.4 Data coding and analysis**

Hesse-Biber (2017) describes the transcription process of the recorded data as the crucial first step towards analysis and interpretation. The MS Teams' built-in transcription

feature was used, where the voice recording and dialog transcriptions were done automatically and concurrently. This feature afforded a saving on resources required to do the transcription, and the time it took to transcribe the recorded data. A human intervention was then required to listen, correct and interpret the sentences verbatim.

The qualitative data went through a step-by-step process of transcription, thematic coding, and analysis. Thematic analysis is suited for a qualitative study as it provides a highly flexible approach that can be modified for the needs of many studies, providing a rich and detailed, yet complex account of data (Braun & Clarke, 2006; King, 2004). As Kumar (2011) and Flick (2018) highlight, there are different step-by-step processes of thematic analysis that a researcher should follow when reading codes and the data responses. The given iterative six step processes are as follows:

- ❖ Immersion in the data by reading transcript repeatedly
- ❖ Systematic coding of data
- ❖ Development of preliminary themes
- ❖ Revision of the themes
- ❖ Selection of the final set of themes
- ❖ Organisation of the final written product around these themes

Elliott (2018) describes the process of coding as a way of tagging data that are relevant to a particular question, by attaching labels to lines of text so that the researcher can group and compare similar or related pieces of information into themes. Thus, for this study the coding was done inductively, in a process that would result in the codes emerging from the data being analysed as Flick (2018) has suggested. Inductive coding is relevant when investigating new ideas and concepts, since the codes come directly from the interview results (Braun & Clarke, 2006; King, 2004). Although there are several software applications in the market that do thematic coding, Saldaña (2013) recommends that the data for small scale studies and novices be coded manually as this exercise helps the researcher to be familiar with the data and its emerging themes.

Theron (2015) defines quantitative data analysis as the range of processes and procedures whereby quantitative data that was collected is converted into some form of explanation, understanding or interpretation of the people and situations that were investigated. In this study, data processing involved the preparation of the raw data into

computer-readable form. The SurveyMonkey® application analysed the collected data and created reports that assisted with visualisation. The reports from SurveyMonkey® were exported to a Microsoft PowerPoint presentation and an excel sheet. SurveyMonkey® uses Microsoft PowerPoint to visually represent data in pie charts and bar graphs. Microsoft excel was used to export the raw data (all input values from the respondents), as this assisted in further analysis of the data and drew results that were not displayed in the Microsoft PowerPoint report.

Data processing involved the descriptive analysis that was done through SurveyMonkey® where the raw data was prepared and translated into computer-readable form. SurveyMonkey® proved to be the most cost-effective method for data analysis. Their integrated (built-in) tool stored the data in a dashboard and interpreted the data into tables, pie charts or bar charts and texts. Data analysis took place as soon as the data was collected. This was done to maintain data integrity and quality.

### **3.6 Design rigour**

Merriam (2009) asserts that trustworthiness and rigour in research is aligned to the traditional terminology of validity and reliability, which other scholars like Silverman (2016) refer to as objectivity and credibility of research. This expands in this instance to include ethical considerations, the way data was collected online and recorded during the focus group interviews, analysed and interpreted, and how the findings were presented. A measure of rigour is through internal validity, where Merriam (2009) links it to the degree at which the research findings match with reality. “Reliability refers to the extent to which research findings can be replicated, if another researcher were to study the same phenomena”, Merriam (2009, p. 220). The findings in this research are open to be reused and replicated. External validity is concerned with how generalisable the results of a research are, and to what extent can the findings of one study be applied to other situations, Merriam (2009). It has been established that although this study is geographically limited to the WC, its findings can be drawn as a conclusion for other provinces. This is further improved by utilising multiple methods of data collection, where the researcher used online surveys and focus groups. A strategy was adopted in the mid-1990s, termed Guba and Lincoln Techniques for establishing trustworthiness (Denzin & Lincoln 2018). This technique focused on the credibility, transferability, dependability,



and confirmability of the research. The table below, adapted from Merriam (2009, p.229) further expands on the strategies that can be deployed to improve rigour.

*Table 3.2 Strategies to improve rigour*

STRATEGY	DESCRIPTION
Triangulation	Using multiple investigators, sources of data, or data collection methods to confirm emerging findings.
Member checks	Taking data and tentative interpretations back to the people from whom they were derived and asking if they are plausible.
Adequate engagement in data collection	Adequate time spent collecting data such that the data becomes “ saturated ” ; this may involve seeking discrepant or negative cases.
Researcher’ s position or reflexivity	Critical self - reflection by the researcher regarding assumptions, worldview, biases, theoretical orientation, and relationship to the study that may affect the investigation.
Peer review/ examination	Discussions with colleagues regarding the process of study, the congruency of emerging findings with the raw data, and tentative interpretations.
Audit trail	A detailed account of the methods, procedures, and decision points in carrying out the study.
Rich, thick descriptions	Providing enough description to contextualize the study such that readers will be able to determine the extent to which their situations match the research context, and, hence, whether findings can be transferred.
Maximum variation	Purposefully seeking variation or diversity in sample selection to allow for a greater range of application of the findings by consumers of the research.

Source: adapted from Merriam (2009, p.229)

To improve rigour for this study, the researcher aligned to a few strategies listed in table 3.2. Multiple sources of data collection methods, in the form of on-line surveys and focus groups were deployed. A considerable time was spent collecting data, thus ensuring that a substantial number of responses were received. The researcher's position in reflecting about the relationship to the study and internal biases were kept in check. Assertions and conclusions were only made based on the collected data. The researcher followed a clear methodology in carrying out this study and an audit trail was made available in chapter one of this report.

### **3.7 Conclusion**

This chapter discussed the research methodology and design approaches used in this research study. By so doing, it explained why the mixed method approach was suitable for study. The chapter also undertook an in-depth discussion of how the research instruments were selected, and how the data were collected and analysed. The next chapter will look at the survey results, data analysis and findings.

## **CHAPTER 4**

### **RESULTS, ANALYSIS AND FINDINGS**

#### **4.1 Introduction**

The previous chapter discussed the research methodology and design approached used in this research study. The chapter explained why the mixed method approach was used to study and answer the research questions of this study. The chapter also undertook an in-depth discussion of how the research instruments were selected, and how the data was collected, coded, and analysed.

This chapter focuses on the presentation and analysis of the results from both the electronic on-line survey and the on-line focus interviews, to answer the research questions.

To recap, the main research question for the study was:

What were the factors that de/motivated electrical engineers from/to take[ing] up membership and, what de/motivated them (not) to participate in the activities of the voluntary professional association called the South African Institute of Electrical Engineers (SAIEE), in the Western Cape (WC)?

The supporting sub-questions to address the main research question were:

- ❖ What can SAIEE do to attract maintain members?
- ❖ How can SAIEE improve participation of electrical engineers?

The data analysis brings forth meaningful information from the raw data and interprets the data. The data analysis undertaken in this chapter should result in the researcher reaching significant conclusions and generating beneficial recommendations in the following chapter. The research findings are presented in the form of textual analysis, tables, graphs, and figures.

#### **4.2 Response rate**

There were 85 respondents who completed the electronic survey, which yielded a 10% response rate. The electronic survey was run for three months, with three reminder emails sent urging the people to complete the survey. There is no probable explanation for this response rate.

### 4.3 Descriptive statistical analysis

Heumann, Shalabh and Schomaker (2016:3) describe the descriptive statistics as a framework that enables the collected data to be properly described, evaluated and analysed in a simpler and meaningful way. The data in this report was described using two methods, namely the measure of central tendency and measure of dispersion. The data that was collected using Likert scale responses and was further processed to perform the central tendency measurements of the data distribution. The first step was to convert the data into numerical values, in line with table 4.1.

Table 4.1 Likert Scale translation

Strongly disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly agree	5

#### 4.3.1 Measure of central tendency

The most common measures of tendency opted for in this study were the mean, median and mode. The mode is the dataset that was used frequently in the data, the mean shows the central value of the dataset or the average value. The median is indicative of the middle number in the dataset, when arranged in its order of magnitude.

#### 4.3.2 Measure of dispersion

Miah (2016:54-55) describes the measure of dispersion as the spread of the datasets under the distribution curve. Several variables may be used to measure the spread, and this study only concentrated on the skewness of the curve and kurtosis. Kurtosis is the measure of the peak of the distribution curve. A normal distribution curve carries a kurtosis of three; when the curve is flatter it is called platykurtic curve with a value of greater than three. When the curve is sharper, the distribution of data is known as leptokurtic, with a value of less than three. This is depicted in the figure 4.1 below.

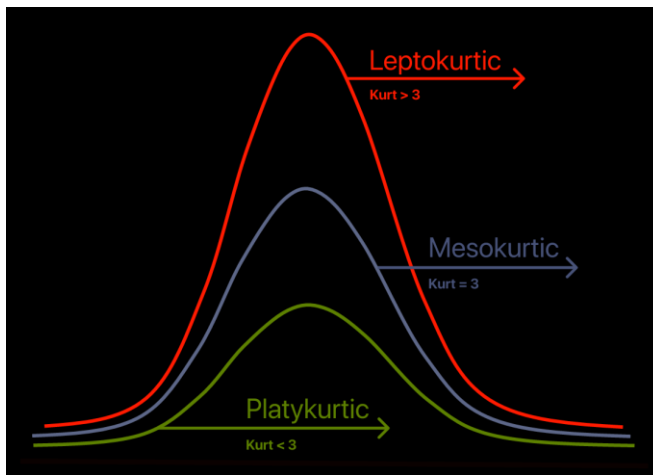


Figure 4.1 Kurtosis curve

A distribution is seen as skewed when a considerable amount of dataset is concentrated on one side of the distribution curve as compared to the other side. Considering that a normal distribution has a skewness of zero; where mean, mode and median are equal. Normal distribution is considered to have a symmetrical distribution curve. A positive skew value is an indication of the distribution of values that are concentrated to the left side of the mean value, the curve will have a long right sloping tail. If the skew value is negative, the mass distribution of values is concentrated on the right hand side of the mean value the curve will have a long left sloping tail; Miah (2016:54-55). A graphical representation of the skewness in figure 4.2 below.

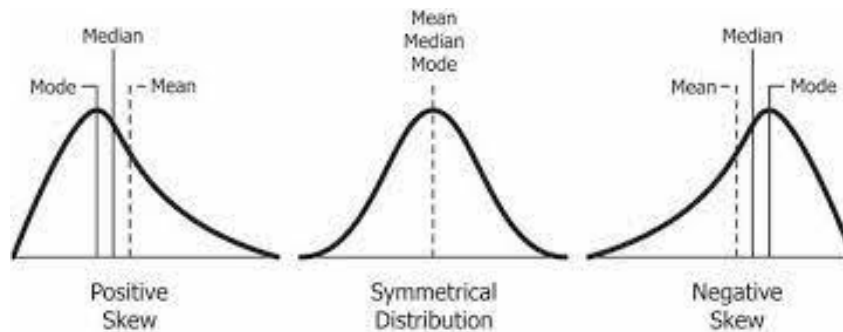


Figure 4.2 Skewness Curve

#### 4.4 Demographics analysis

The background personal information of the respondents was covered in question one to note of the research questionnaire. The information extracted was about the gender, age and the number of years' experience, the highest level of education, membership status with SAIEE, and how frequent the respondents have committed to attending interventions organised by SAIEE in a calendar year.

Table 4.2 Demographic data

Sex	
Female	Male
14.29%	86%

Age (years)	
18 - 24	0%
25 - 34	8%
35 - 44	35%
45 - 54	22%
55 - 64	15%
65 - 75	13%
75 or older	6%

SAIEE Membership	
Yes	66%
No	34%

Frequency of attendance per year	
1 - 3 times	38%
4 - 7 times	833%
above 8 times	714%
never	46%

Work Experience (years)	
0 - 8	6%
9-25	52%
26 and above	42%

Level of education	
Diploma	19%
Degree	51%
Masters	27%
Doctorate	4%

Type of employment	
Permanent	72%
Contract	7%
Self	12%
Pensioner	8%

Although the objectives of the research were to find the factors impacting on membership and participation, the demographic data was collected for information sharing with the VPA. It is imperative to compare the demographic state of membership in Western Cape with the observations from several studies that have been done prior. The collected data was useful to make recommendations for future studies and develop different strategies that could be adopted by SAIEE to improve its services. Walsh and Daddario (2015:118) found that professionals at their early stages of their careers considered both career development and networking opportunities as the benefits that were influential in their decision to join a VPA. In this study, the respondents at early stages constituted 6% of the population. Davis, Radohl, Kristen and Benorden (2020:49) alluded to the fact that older employees are likely to be members of professional associations and retain membership while the millennial generation are reliant on technological platforms and multimedia in the workplace. This could mean SAIEE should look at alternative means of engaging with professionals, to attract the younger generation. The targeted population would be the 8% (25 – 34) and the 19% (older than 65). Henczel (2016:283) asserts that newly qualified employees need role models and mentors (from the pool of experienced employees) to impart knowledge and informal learning opportunities. These prospective

mentors are usually the pillars of the professional associations. Bandias and Sharma (2015:367) confirmed a significant, positive relationship exists between membership of the voluntary professional association (VPA) and age, income, educational qualifications, years of experience and job roles. This would be contributed to career growth, people taking up roles of responsibilities, mentorship and commitment to industry development. Walsh and Daddario (2015:120), in their study confirmed that employment (financial stability) plays an important role when deciding to join a professional association and participate in its interventions.

#### 4.5 Factors that motivated you to join SAIEE

This question's purpose was to answer the main question of this study. The respondents were expected to rate the factors that motivated them to join SAIEE using the Likert scale (1 – 5). In addition to the mentioned factors, they were afforded an option to add other factors that motivated them to join SAIEE. The number of respondents who answered this question was 70, and 15 skipped the question. The responses are shown in the figure 4.3, below with the associated percentage responses. The majority of the sample has an overall negative skewness recorded, which indicates the long-left tail. The mass distribution of the samples was concentrated on the right side of the mean value. Except for the last question, where the skewness was positive, and this was an indication of the dataset the had a concentration on the left side of the mean. The sample was recorded to be platykurtic, with the kurtosis values of less than three on all datasets.

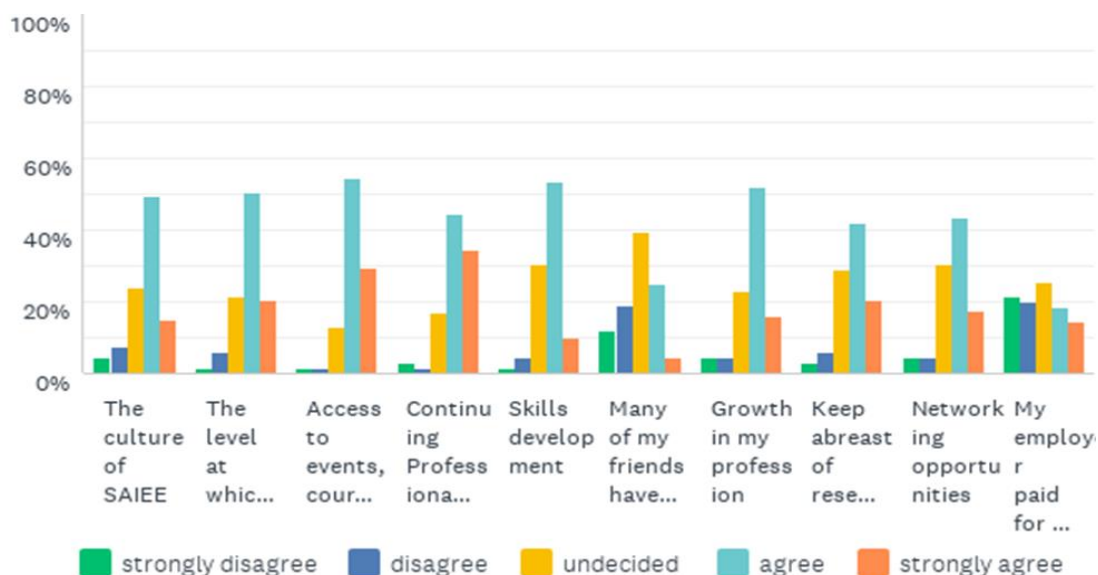


Figure 4.3 Factors that motivated you to join SAIEE

#### **4.5.1 The culture of SAIEE**

This factor addressed how SAIEE is perceived to conduct its business, and if this affected the decision of being affiliated with an organisation of such stature. The mode for this dataset was four, indicating that majority of the respondents (constituting 49.25%) agreed that the culture of SAIEE has motivated them to join the VPA, and 14.93% strongly agreed to that fact. The response is in agreement with the findings of Henczel (2016:283) where it was found that voluntary professional associations impacted on the profession of librarians by promoting the culture and identity of their profession.

#### **4.5.2 The level at which SAIEE build professional behaviour of the engineers**

This factor addressed the if level at which SAIEE was perceived to build (mould) the electrical engineers professionally and professionalisation in the industry affected their decision to join the VPA. The mode for this dataset was four, indicating that majority of the respondents (constituting 50.72%) agreed that the SAIEE builds up the professional behaviour of the engineers and 20.29% strongly agreed to that fact. This finding is in agreement with Henczel (2016:285) where is was found that indoctrinating professionalism behaviour within a profession creates a sustainable future for that profession.

#### **4.5.3 Access to events, courses, seminars, webinars and publications**

This factor addressed whether access to events, courses, seminars, webinars and publications motivated people to join SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 54.41%) agreed that access to SAIEE events and publications were a major contributing factor for them to join SAIEE and 29.41% strongly agreed to that fact. Attending SAIEE events helped with sharpening the skills and career development. This was crucial in keeping up with the latest technology developments in the electrical industry. Sturges (2015:49) re-iterates the need for the voluntary professional associations to assist with publishing papers, organise events and short courses and also advise and mentor aspiring professionals.



#### **4.5.4 Continuing professional development (CPD) activities**

This factor addressed whether the collecting CPD motivated people to join SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 44.29%) agreed that access to CPD activities is a major contributing factor for them to join SAIEE and 34.29% strongly agreed to that fact. Collection of CPD points was crucial for the upkeep of the ECSA registration and reporting for the 5 year cycle. This finding agrees with the study by Bowen-Chang and Hosein (2018:103) which discovered that CPD is very important as it leads to increased participation on the VPAs and serves as an impetus for staff growth and organisational development.

#### **4.5.5 Skills development**

This factor addressed whether skills development motivated electrical engineers to join and be members of SAIEE. Skills development, CPD and access to courses and industry visits in the region complemented each other. This result agrees with Bowen-Chang and Hosein (2018:103) findings in their study where they highlight the crucial role of the VPAs play in fostering and encouraging the development of their members' skills set to maintain their relevance in the workplace. This is mainly done through the CPD process. The mode was four, indicating that majority of the respondents (constituting 53.62%) agreed that skills development encourages them to join SAIEE and 10.14% strongly agreed to that fact.

Participants from the focus group expressed their views that joining a professional association like SAIEE comes with incredible benefits that range from capacity development, which includes having access to training materials or a variety of resources, as well as being exposed to training and development to advance knowledge, and skills.

#### **4.5.6 Many of my friends have joined**

This factor addressed whether friends and colleagues, through networking, influenced one's decision to join a VPA. Most of the respondents (39.71%) were undecided about their friend's influence in them joining the VPA. The mode for this dataset was three. Only 25% of the respondents agreed and 4% strongly agreed that their friends had an influence in them joining SAIEE. The finding in this study was in contraction to the findings

of Walsh and Daddario (2015:121) who suggested that colleagues and professional contacts were instrumental in influencing professionals to join a VPA.

#### **4.5.7 Growth in my profession**

Prospects of career growth and progression will trigger one to act. This factor addressed whether being a member of SAIEE was perceived to be promoting career growth. The mode for this dataset was four, indicating that the majority of respondents (52.17%) agreed that this factor influenced them to join SAIEE and 15.94% strongly agreed to that fact. This finding is in agreement with Ritzhaupt, Stefaniak, Conklin and Budhrani (2020: 22) whom in their study they confirm that professionals who already possess a graduate degree, often rely on their voluntary professional associations to provide additional courses, webinar, and other learning experiences to contribute to their professional growth and development.

#### **4.5.8 Keep abreast of research in business**

This factor addressed if SAIEE was supporting research and latest technology developments affected the decision to join and be a member. The mode for this dataset was four, which was indicative of most of the respondents (42.03%) agreeing that this factor motivated them to join SAIEE and 20.29% strongly agreed to that fact. The finding in this study is in agreement with the findings of Wotherspoon and McCarthy (2016:8) who asserts that some of the factors that strongly motivate professionals to join VPAs included a positive attitude to research.

#### **4.5.9 Networking opportunities**

This factor addressed the capacity at which SAIEE enabled networking opportunities affected the decision to be a member. The mode for this dataset was four, indicating that 43.48% of the respondents agreed that the networking opportunities available motivated them to join SAIEE and 17.39% strongly agreed to that fact. This finding is in agreement with the study by Thomas, Stripling, Stephens and Stephenson (2018:4) where they identified that professional development activities most likely to produce sustained learning include engagement in networks where groups link in person to explore and discuss topics of interest, pursue common goals, share information, and address

concerns.

Participants from the focus group also recognised SAIEE as a platform for learning from different streams of electrical engineering (cross-learning), knowledge gain, expansion and knowledge exchange. Participants identified another significant advantage of SAIEE as the opportunity for learning that come from connecting with different or new professionals, with responses from open-ended questions being:

*“So it was an event and meeting place for like-minded people to experience expanded their general knowledge and become familiar with other territories that you don’t necessarily get exposed to”*

*“You get to learn from the different streams within the engineering sector electrically. So be telecomms heavy current, light current or power you get to get a little bit of knowledge from those presentations”*

*“the broader knowledge that you pick up from networking and from doing related training, that’s not direct in your line but has got additional benefits”*

#### **4.5.10 My employer paid for the membership**

This factor addressed whether being subsidised by the employer affected the decision to join SAIEE. The mode for this dataset was three, indicating that 25.71% of the respondents were undecided to the fact that their employer pays for the membership. 20% disagreed and 21.43% strongly disagreed to the fact. While this factor was not dwelled upon, the expensive fees were frequently mentioned, Walsh and Daddario (2015:123) found out that when employers re-imburse the professionals for their membership fees, this factor encourages employees to be members of the VPAs. The absence of social support or lack of familiarity with current members may pose a potential barrier in selection decisions.

#### **4.5.11 Other factors**

Participants expressed their views for joining SAIEE and it emerged that training and development, keeping abreast of new developments in the electrical industry, socialising with fellow engineers, a voice for key policy developments in industry, gaining CPD points and mentorship were among the benefits for joining SAIEE. A few respondents pointed out that the status of being a member of SAIEE was held at high regard, and some had

their lecturers from university encouraging them to be members of SAIEE. Some of the responses from open-ended questions being:

*“Keep update with development in electricity business”*

*“Keeping up with other technology field”*

*“Membership of educated engineers with many common aims and challenges”*

*“Acquiring ECSA CPD points and discount on ECSA fees”*

*“My lecturer for Protection Technology 3 and 4 recommended it.”*

*“discount on my ECSA fees and then the other benefit was to be able to have access to some training interventions”*

#### **4.6 Factors that demotivated me from joining SAIEE**

This question’s purpose was to answer the main question of this study. The respondents were expected to rate the factors using the Likert scale (1 – 5). In addition to the mentioned factors, they were afforded an option to add other factors that demotivated them from taking up membership and joining SAIEE. The number of respondents who answered this question were 62, and 23 skipped the question. The responses are shown in the figure 4.4, below with the associated percentage responses. Most of the sample datasets have an overall negative skewness recorded, which indicates the long-left tail. The mass distribution of the samples was concentrated on the right side of the mean value. With the exception of factor two and three, where the skewness was positive, and this was an indication of the dataset that had a concentration on the left side of the mean. The sample was recorded to be platykurtic, with the kurtosis values of less than three on all datasets.

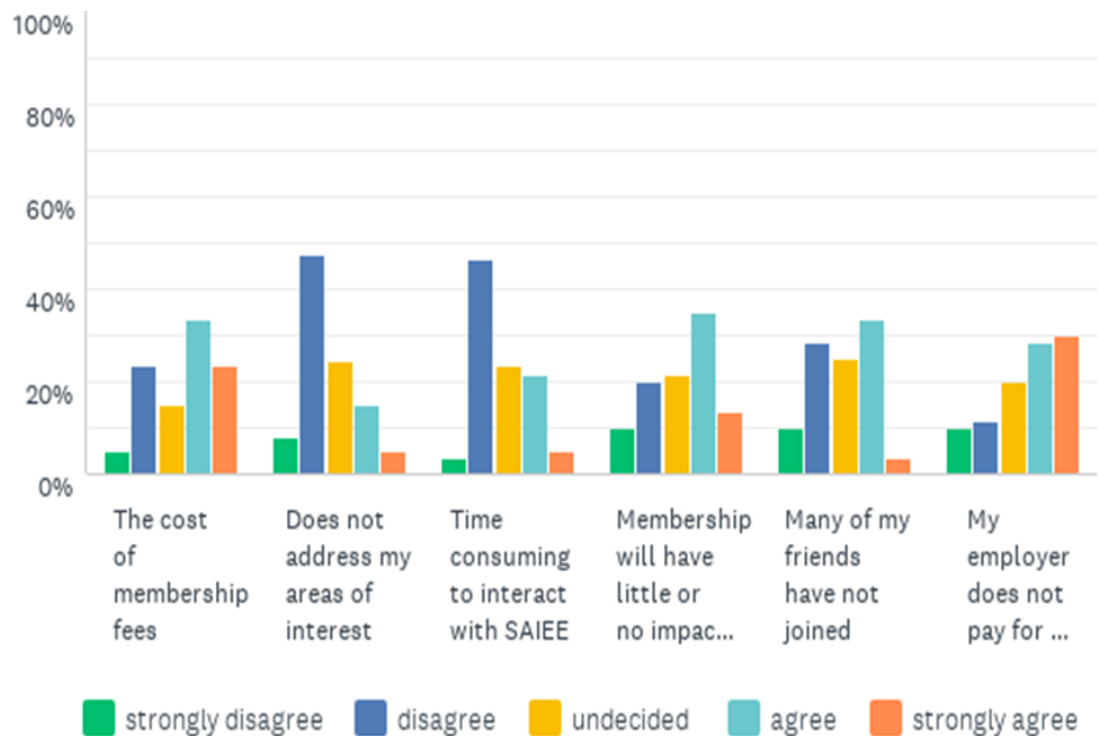


Figure 4.4 Factors that demotivated me from joining SAIEE

#### 4.6.1 The cost of membership fees

This factor addressed how the cost of membership fees affect the decision to be a members of SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 33.33%) agreed that the cost of membership deter them from joining SAIEE, and 23.33% strongly agreed to that fact. The response is in agreement with the findings of Innes, Cope and Young (2020:4) where in their study found that one of the factors influencing professionals not to join VPAs as lacking in value for money and not worth the cost of annual membership.

Despite the significant benefits provided by the professional body, participants from the focus group also stressed that the high registration fees for membership and affordability emerged as a main challenge, where participants expressed the need to restructure the fees to accommodate everyone even those who are not earning much and those who have just started working. Some of the responses from open-ended questions being:

*“And then also maybe the issue of not being able to afford to pay for these registration fees because they are quite high as well”*

*“I was still though undergoing, some practical apprenticeship training sponsored so I wasn't earning very much actually more like a student doing some practicals. So certainly, from the point of view of the fees that one has to pay. That was, high even in the first*

*years when now actually got a full-time job and was working as electrical engineer “  
“The little value SAIEE added does not justify the costs/ member fees.”*

#### **4.6.2 Does not address my areas of interest**

This factor addressed whether SAIEE does not cover the needs of the electrical engineers. The mode for this dataset was two, indicating that majority of the respondents (constituting 47.54%) disagreed that the SAIEE does not address their interests. It is imperative for SAIEE to address the 20% population that feel that their areas of interest are not addressed. This could be addressed by means of a survey and needs analysis, to ensure that all the electrical engineer’s needs are captured.

#### **4.6.3 Time consuming to interact with SAIEE**

By virtue of SAIEE being a VPA with it’s membership pursuing their interests during their spare time; this factor addressed how professionals view the time invested in SAIEE. The mode for this dataset was two, indicating that majority of the respondents (constituting 46.67%) disagreed that it is time consuming to interact with SAIEE, and 3.33% strongly disagreed to that fact. There is significant number of professionals who agrees with that it is time consuming to be a member of SAIEE, and this finding is in agreement with finding in the study of Dixit (2016:47), asserting that due to lack of time they could not join these VPAs. The majority of the respondents seems to be contradicting this fact.

#### **4.6.4 Membership will have little or no impact in my career**

This factor addressed the perceived impact or value the SAIEE have to the electrical engineers’ careers. The mode for this dataset was four, indicating that majority of the respondents (constituting 35%) agreed that having the SAIEE membership will have little or no impact in their careers. This finding is in contradiction with the study findings by Ki (2016:7) who suggested that membership to VPAs enables access to career growth, information on employment opportunities, and networking opportunities with other professionals in the field.

The focus group participants also expressed their concerns around the benefits SAIEE provide for their career development. They indicated that the employers do not recognise membership to SAIEE as a motivation to promote individuals, while some voiced out that

for the aged electrical engineers nearing pension, there is no perceived benefits to being a member of SAIEE. A few indicated that the CPD point system offered by SAIEE was not relevant for experienced engineers, hence they preferred to be members of other associations that offered value for money, quality, and CPD. Some of the responses from open-ended questions being:

*“But the most important thing for me is: why should I join? Umm, there's no solid reason for me to join, what benefits does the organisation have for my career?”*

*“it was not stipulated as a requirement in terms of my career at any stage of promotions specifically membership of the SAIEE”*

*“when it comes to career growth, being recognized in the industry. Well, I can tell you right now where I work doesn't matter. It doesn't matter.”*

*“now I'm very close to retirement. So, to undergo a lot of training and development now for me, I don't see is for me a major advantage”*

#### **4.6.5 Many of my friends have not joined**

This factor addressed how close associates (friends and colleagues) have an influence in a professional's decision to join SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 33.33%) agreed that their circle of friends were also not members of SAIEE. Ki (2016:7) found in their study that the value of the membership dues and personal benefits obtained affects how the members recommends for their friends to associate with the VPAs.

#### **4.6.6 My employer does not pay for the membership**

This factor addressed the impact of having the employers paying the SAIEE membership fees for the respondents. The mode for this dataset was five, indicating that majority of the respondents (constituting 30%) strongly agreed that the decision to not join the VPA was greatly affected by and 28.33% agreed to that fact. This finding is in agreement with the study by Walsh and Daddario (2015:123) where they found out that when employers re-imburse the professionals for their membership fees, this factor encourages employees to be members of the VPAs. Some of the responses from open-ended questions being:

*“My previous employer paid for membership and that, together with the discount on ECSA fees meant it was a no-brainer. My new employer only pays for one membership,*

which makes me consider leaving SAIEE, as the fees have increased considerably in recent years.”

“Work/Employer does not acknowledge or accredit the importance of these institutions”

#### 4.7 Factors influencing participation in SAIEE interventions

This question’s purpose was to answer the main question of this study. The respondents were expected to rate the factors using the Likert scale (1 – 5). In addition to the mentioned factors, they were afforded an option to add other factors that influenced them to participate in interventions that were organised by SAIEE. The number of respondents who answered this question is 80, and 5 skipped the question. The responses are indicated graphically in the figure 4.5, below with the associated percentage responses. The sample has an overall negative skewness recorded, which indicates the long-left tail. The mass distribution of the samples was concentrated on the right side of the mean value. With the exception of factors from eight till 11; where the skewness was positive, and this was an indication of the dataset that had a high concentration of values on the left side of the mean. The sample was recorded to be platykurtic, with the kurtosis values of less than three on all datasets.

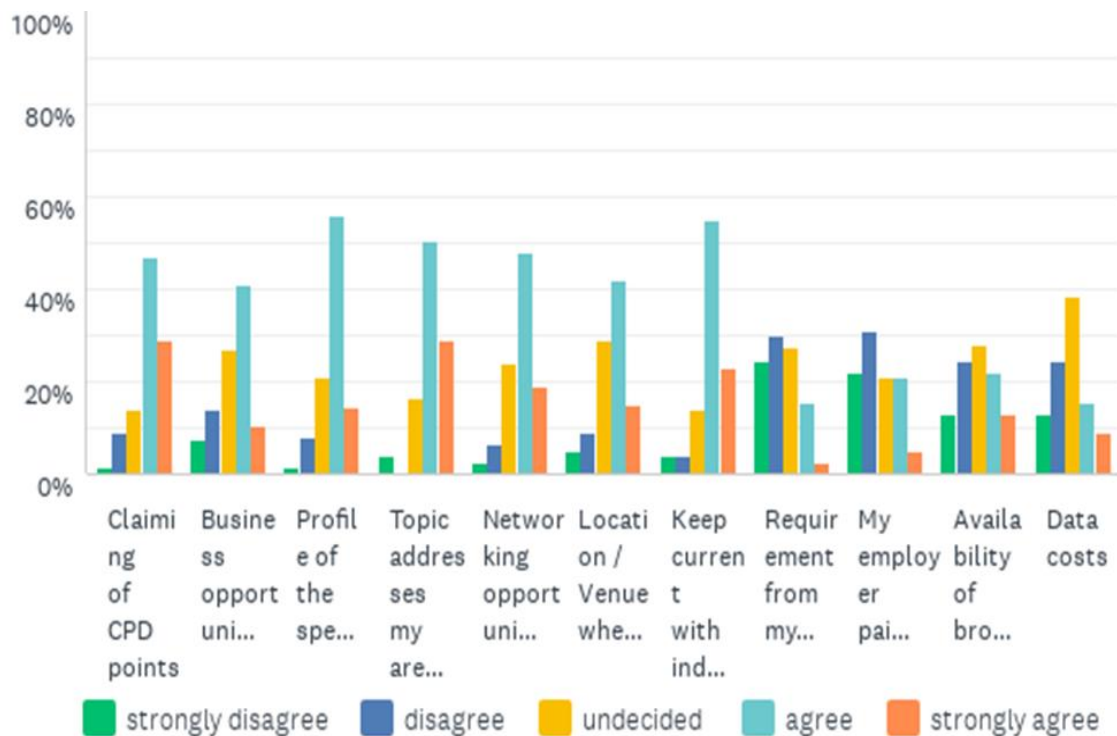


Figure 4.5 Factors influencing participation in SAIEE interventions



#### **4.7.1 Claiming of CPD points**

This factor addressed whether the claiming or collecting of CPD points was influencing electrical engineers to participate in the interventions conducted by SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 46.85%) agreed that claiming of CPD points influenced them, with an additional 29.11% of the respondents strongly agreeing to that fact. CPD is a mechanism through which all registered persons would have to renew their professional registration with the Engineering Council of South Africa (ECSA). This was gazetted in section 22(1) of the Engineering Profession Act, 2000 (Act 46 of 2000).

#### **4.7.2 Business opportunities**

This factor addressed whether attending the SAIEE interventions brought business opportunities for those who attended. The mode for this dataset was four, indicating that majority of the respondents (constituting 41.03%) agree that business opportunities influenced their decisions to participate in interventions. This finding is in agreement with the study findings by Li and Barbieri (2019:7) who found that some people join VPAs for economic incentives and innovative business opportunities they reap.

#### **4.7.3 Profile of the speakers**

This factor addressed how the profile of the speaker, presenting technical topics, influenced the electrical engineers' decisions to attend those interventions. The speaker's profile might involve their skills, professional achievements in that topic / industry, experience, The mode for this dataset was four, indicating that majority of the respondents (constituting 55.84%) agreed that the profile of the speaker played a vital role in them deciding to attend the interventions. The finding from this is in agreement with the study by Ritzhaupt et al. (2020:22) that confirmed that the credentials of guest speakers at local meetings, connecting with professionals were noted to be of major importance.

#### **4.7.4 Topic addresses my areas of interest**

This factor addressed whether the topics presented by the speakers during presentations affected the decision to attend the interventions organised by SAIEE. The mode for this dataset was four, indicating that majority of the respondents (constituting 50.63%), with an additional 29.11% of the respondents strongly agreeing to that fact. This finding is in agreement with the study findings by Thomas et al. (2018:4) who suggested that professionals who attended VPA interventions are likely to be involved in development activities, most likely to produce sustained learning including engagement in professional networks where groups link in person to explore and discuss topics of interest, pursue common goals, share information, and address concerns.

#### **4.7.5 Networking opportunities**

This factor addressed whether the interventions organised by SAIEE offered networking opportunities. The mode for this dataset was four, indicating that majority of the respondents (constituting 48.10%) agreed that attending the interventions offered networking opportunities. This finding is in agreement with the study findings by Ki (2016:7) who suggested that membership to VPAs enables access to career and employment opportunity information and networking opportunities with other professionals in the field. Thomas et al. (2018:4) alluded to the fact that that VPAs offers their members a source of networking and connection.

Participants of the focus group expressed the importance of networking amongst other electrical engineers in the industry to become more knowledgeable. Participants identified another significant advantage of SAIEE as the opportunity for learning that come from connecting with different or new professionals. Some of the responses from open-ended questions being:

*“So it was an event and meeting place for like-minded people to experience expanded their general knowledge and become familiar with other territories that you don't necessarily get exposed to”*

*“the broader knowledge that you pick up from networking and from doing related training, that's not direct in your line but has got additional benefits”*

#### **4.7.6 Location / Venue where the event was held**

This factor addressed whether the location and venue where the events were held influenced the participation to the interventions. Pre-Covid lockdown, there were two venues where the meetings were held; Bellville and Newlands. The chosen venue for interventions alternated between the two venues and this decision was made to accommodate the south-bound and north-bound members. The aim was not to view the most popular of the two venues, but to determine the impact of the venues to the decision made to attend events. The mode for this dataset was four, indicating that majority of the respondents (constituting 41.77%) agreed that the location and venue had an influence in them attending events organised by SAIEE.

#### **4.7.7 Keep current with industry news**

This factor addressed whether keeping current with the industry news was contributing to professionals attending the interventions organised by SAIEE. This involved discussing new standards and developments, new projects, and government interventions. The mode for this dataset was four, indicating that majority of the respondents (constituting 55.13%) agreed that they participated in SAIEE interventions to keep up with the current news in the electrical engineering industry. This could be an area of development for SAIEE, to be relevant in the electrical engineering industry and to grow the institution.

#### **4.7.8 Requirement from my employer**

This factor addressed the perceived impact or value the SAIEE have to the electrical engineers' careers. The mode for this dataset was two, indicating that majority of the respondents (constituting 29.87%) disagreed that their employers prescribed for them to participate in the interventions organised by SAIEE.

#### **4.7.9 My employer paid for the interventions**

This factor addressed the perceived impact or value the SAIEE have to the electrical engineers' careers. The mode for this dataset was two, indicating that majority of the respondents (constituting 31.17%) disagreed that their employers paid for the courses they attended at SAIEE. Various interventions and partnerships could be developed to

enable employers subsidise the interventions at SAIEE.

#### **4.7.10 Availability of broadband in my area**

This factor addressed if that availability of stable broadband (internet connection) motivated the professionals from participating in the SAIEE events. Broadband is a collective name for telecommunications networks available, or the fixed wires (fibre and copper data lines). The mode for this dataset was three, indicating that majority of the respondents (constituting 28.21%) were undecided about the impact of the availability of broadband services in their decisions to participate in SAIEE interventions. This factor proved to be immaterial.

#### **4.7.11 Data costs**

This factor addressed the extend at which the cost of data affected the electrical engineers' decisions to participate in interventions of SAIEE. During Covid-19 restrictions, all seminars, meetings and some courses were done on-line. Professionals were expected to invest in telecommunication networks in order to access these services. The mode for this dataset was three, indicating that majority of the respondents (constituting 38.46%) were undecided about the implication of the data costs. This factor proved to be immaterial.

#### **4.7.12 Other factors**

The participants expressed their views that the availability of on-line events and webinars made it easier for them to participate in interventions offered by SAIEE. It was also indicated that there were a lot of interesting topics and subjects that were presented during the Covid-19 lockdown period. A few respondents never participated in interventions, as they were not aware of the events offered by SAIEE. Some of the responses from open-ended questions being:

*“Online event accessibility and topics”*

*“During lockdown, access to SAIEE webinars, and the associated CPD points was phenomenal! I really enjoyed that I could attend events organised by other provinces than my own. HOWEVER, the new form of emails makes it difficult to spot the webinars – when one becomes busy, one doesn't read mass emails that don't catch your attention from*

*the subject line. I always used to read the webinar emails, but now I can't pick them out easily”*

*“The fact that meetings are predominantly on-line, and I can participate easily*

#### 4.8 Factors demotivating participation in interventions

This question’s purpose was to answer the main question of this study. The respondents were expected to rate the factors using the Likert scale (1 – 5). In addition to the mentioned factors, they were afforded an option to add other factors that demotivated them to participate in interventions that were organised by SAIEE. The number of respondents who answered this question was 77, and 8 skipped the question. The responses are shown in the figure 4.6, below with the associated percentage responses. The sample has an overall positive skewness recorded, which indicates the long-right tail. The mass distribution of the samples is concentrated on the left side of the mean value. With the exception of factor one and four, where the skewness was negative, and this was an indication of the dataset that had a concentration of values on the right side of the mean. The sample was recorded to be platykurtic, with the kurtosis values of less than three on all datasets.

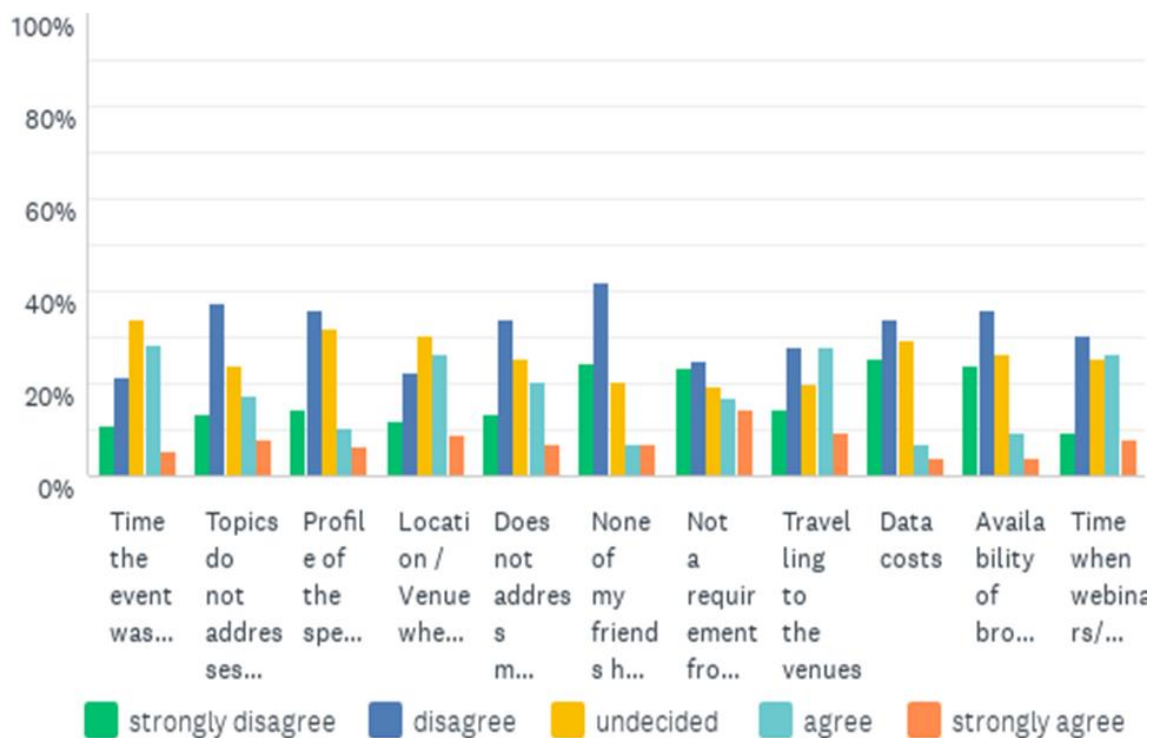


Figure 4.6 Factors demotivating participation in interventions

#### **4.8.1 Time the event was held**

This factor addressed whether the time the events were held affected the decision to attend. The mode for this dataset was three, indicating that majority of the respondents (constituting 33.78%) were undecided, while the 28.38% agreed the time the events were held demotivated them from attending the events. Due to the nature of operations of the VPAs, the events were always scheduled in the afternoons, to accommodate the professionals who were working full time.

Participants of the focus group expressed a concern that time when the events were held was a major challenge, quoting:

*“You'll find that after work, you must quickly rush to those meetings or presentations. So there's also a time factor”*

#### **4.8.2 Topics do not address my areas of interest**

This factor addressed whether the topics presented by the speakers during presentations affected the decision to not attend the interventions organised by SAIEE. The mode for this dataset was two, indicating that majority of the respondents (constituting 37.33%) disagree, with an additional 24% of the respondents undecided to that fact.

#### **4.8.3 Profile of the speakers**

This factor addressed how the profile of the speakers, presenting technical topics, influenced the electrical engineers' decisions to not attend those interventions. The speaker's profile might involve their skills, professional achievements in that topic / industry, experience. The mode for this dataset was 2, indicating that majority of the respondents (constituting 36%) disagreed, with an additional 32% undecided of the fact that the profile of the speaker played a vital role in them deciding to not attend the interventions.

#### **4.8.4 Location / Venue where the event was held**

This factor addressed whether the location and venue where the events were held demotivated the electrical engineers from participating in interventions organised by

SAIEE. The mode for this dataset was three, indicating that majority of the respondents (constituting 30.26%) were undecided, while 26.32% agreed that the location and venue where the event was held had an impact no them deciding not to attend events.

Participants of the focus group expressed a concern that the location and venue where the events were held was a major challenge, quoting:

*“The areas where we have those presentations or meeting points are in awkward areas. Especially for someone who uses public transport”*

#### **4.8.5 None of my friends have attended**

This factor addressed how close associates (friends and colleagues) had an influence in a professional’s decision to not attend interventions organised by SAIEE. The mode for this dataset was two, indicating that majority of the respondents (constituting 41.89%) disagreed that their circle of friends was also not attending SAIEE interventions, and an additional 20.27% was undecided to that fact.

#### **4.8.6 Not a requirement from my employer**

This factor addressed whether the decision to not attend the interventions organised by SAIEE was not affected by employer’s recognising SAIEE. The mode for this dataset was two, indicating that majority of the respondents (constituting 25%) disagreed their employers prescribed for them to participate in the interventions organised by SAIEE and a further 23.68% strongly disagreed to that fact.

#### **4.8.7 Travelling to the venues**

This factor addressed whether traveling to the venues affected the decisions taken not to attend interventions organised by SAIEE. The travelling covered the following limitations: access to reliable transportation, time it took to reach the venue, traffic conditions and weather. The mode for this dataset was four, indicating that majority of the respondents (constituting 28%) agreed that travelling to the venues demotivated them from participating in interventions organised by SAIEE and another 28% disagreed with that claim.

#### **4.8.8 Data costs**

This factor addressed the extent at which the cost of data affected the electrical engineers' decisions to participate in interventions of SAIEE. During Covid-19 restrictions, all seminars, meetings, and some courses were done on-line. Professionals were expected to invest in telecommunication networks to access these services. The mode for this dataset was two, indicating that majority of the respondents (constituting 33.78%) disagreed that the data costs influenced them from participating in interventions organised by SAIEE.

#### **4.8.9 Availability of broadband in my area**

This factor addressed if that availability of stable broadband (internet connection) demotivated the professionals from participating in the SAIEE events. Broadband is a collective name for telecommunications networks available, or the fixed wires (fibre and copper data lines). The mode for this dataset was two, indicating that majority of the respondents (constituting 36%) disagreed that broadband demotivated them from attending the events. And additional 26.67% were undecided to the fact.

#### **4.8.10 Time when webinars/e-conferences are held**

This factor addressed whether the time the on-line conferences and webinars demotivated the professionals from attending the events. The mode for this dataset was two, indicating that majority of the respondents (constituting 30.67%) disagreed to that fact.

### **4.9 What can SAIEE do to attract and maintain members?**

Participants felt that the engineering field can be isolated where people are working in silos without interacting, and therefore mentorship programme is imperative to motivate young engineers to participate in the body. Engaging in mentorship programme would allow information sharing, gain new perspectives and enhanced knowledge and skills.

*“engineers need mentors along the way so that can be also a fairly big motivator in student members to become full members because the membership pool and the mentor pool is available to draw from. Not just necessarily in email, inside the company and itself”*



*“speaking to young engineers and motivating them”*

Participants agreed that SAIEE is currently not inclusive enough, this is because, the organisation is not actively involving new engineers. They mentioned that the body is also not considering artisans, technicians, technologists, it was only designed for engineers, even technicians think the body is for engineers. It has also emerged from the participants that SAIEE has not transformed enough, Universities of Technology (UoT) have been excluded in benefiting from the body, it was also mentioned that only university students benefit from SAIEE’s student competitions, while UoT students were unaware of such benefits. Therefore, participants recommended that SAIEE be promoted and made open to all academic institutions.

*“I think that currently where I'm working now, there's not a lot available to engineers, especially in new engineers that come into the business”*

*“SAIEE as a body was designed for engineers only. It didn't cater for artisans, technician technologists, hence the name SAIEE”*

*“If you go to Stellenbosch, you ask the students, they will know about SAIEE you go to UCT they will know about SAIEE. But if you go to Cape Tech/CPUT. It's only now that they're starting to know. Why is it so? SAIEE is visible to those institutions”*

The participants expressed their concerns around SAIEE visibility. They recognised that SAIEE was only visible to universities like Stellenbosch and UCT, while UoT students were unaware and had no knowledge or understanding of the professional association. They also agreed that the visibility was minimal to those in the working environment; therefore, there was a need for SAIEE to promote themselves and be more visible, particularly to young engineers and professionals.

*“Like I said. SAIEE is visible in universities. If you go to Stellenbosch, you ask the students, they will know about SAIEE you go to UCT they will know about SAIEE. But if you go to Cape Tech/CPUT. It's only now that they're starting to know. Why is it so? SAIEE is visible to those institutions”*

*“I think minimal to one in the working environment but also I agree that in terms of SAIEE promoting and making themselves more visible and more seen as something, particularly for young engineers and professionals”*

*“I used to see ads in the newspaper and adds around my company internally where it was advertised. But lately I don't see that anymore”*

*“It's not like it's in your face, you are exposed to the organisation and this is what they offer. So yeah, that I think if they highlight that more and more people will go and join”*

#### **4.10 How can SAIEE improve participation of electrical engineers?**

The participants expressed their views that the availability of on-line events and webinars made it easier for them to participate in interventions offered by SAIEE. It was also indicated that there were a lot of interesting topics and subjects that were presented during the Covid-19 lockdown period. The participants suggested several factors that can help increase participation of electrical engineers as:

- ❖ SAIEE's presence in Universities of Technologies, this will enable the newly graduated engineers to be groomed for the future and have awareness and access to the VPA. Having different generational cohorts would enable sustainability of the VPA.
- ❖ More engagement or better advertising, with improved communication channels between the VPA and its members. This point was not only directed to the VPA, but the individual members too.
- ❖ Alternative funding options for courses. The participants felt that the cost of attending courses was still high, there was no significant change even though most of the courses were attended on-line due to Covid-19 restrictions. Training of trainers, the use of e-learning, and other funding avenues were seen as alternative approaches that could reduce the training costs.
- ❖ Affordable membership costs. Participants also felt that it would be beneficial if SAIEE devised alternative funding options for members. There was also a suggestion for employers to subsidise the SAIEE membership costs. This could be by means of group membership discounts, and referrals.
- ❖ Addressing technology issues affecting Africa, of value supporting the environment. These could be innovative ideas in line with water resources, energy and renewable technologies.

*“we could have the train-the-trainer situations where you would educate somebody within that business to do the training, which would lower the costs for training”*

*“The training courses obviously could be funded via other means like government interventions and so on ”*

*“I think having an organisation that actually provides training would help quite a bit. extra*

*support base from an organisation would actually be good”*

Participants expressed concerns about the meeting locations being inaccessible, particularly for those who were traveling by public transportation. They underlined the need of holding meetings in locations where attendees may easily access, participate, and experience the presentations. Another suggestion that was raised was to hold the meetings at the academic institutions, for the SAIEE to be visible to the students, taking into consideration that there were inter-institution transport that could be organised. Another issue related to the location was the scheduling of the meetings. This was a concern especially when the meetings were scheduled for after business hours.

*“The areas where we have those presentations or meeting points are in awkward areas. Especially for someone who uses public transport”*

*“You’ll find that after work, you must quickly rush to those meetings or presentations. So there’s also a time factor”*

*“they do have lecture rooms that are big enough that can accommodate everyone”*

*“if you wanna get to the students it’s within the institution. They can easily walk to the lectures”*

*“Maybe students can arrange transportation from the executive from one institution to the other”*

Participants recognised the need for partnerships and collaboration to better coordinate the SAIEE activities and to ensure alignment to the industry needs. The participants expressed the importance of networking amongst other people within SAIEE to become more knowledgeable about the benefits of the VPA. Participants also suggested that large corporations like ESKOM, TELKOM, and SENTECH should collaborate with SAIEE to ensure that their training programs are in line with the standards set by the industry for engineers. By collaborating with industry, the organisation will be funded, able to meet industry training needs, and share the of information and experiences from many engineers within an industry. The partnership will allow maximising and sharing resources amongst the collaborators.

*“you have to know people within SAIEE to know what’s going on”*

*“I would say it would be very beneficial for them to actually tie in with our organisations, companies like Eskom ,Transnet, wherever and actually engage with these organisations and sort of tie in the training needs of that organisation with the body itself somehow to*

*get that linked together”*

The participants expressed their views that the communication from SAIEE regarding the interventions was not effective, especially the new emailing platform that was adopted. They voiced out that they are never aware of when the events are scheduled. This made it difficult for them to participate in the interventions offered by SAIEE. A few people indicated that the employer did not recognise the VPA, and the fact that some electrical engineers were losing interest in the field and changing careers.

*“The new form of emails makes it difficult to spot the webinars - when one becomes busy, one doesn't read mass emails that don't catch your attention from the subject line. I always used to read the webinar emails, but now i can't pick them out easily”*

*“Current Electrical Engineer not interested to the field anymore”*

*“Not always aware of when events will be held”*

#### **4.11 Conclusion**

Participants expressed their views that joining a VPA like SAIEE came with incredible benefits. In terms of the factors that motivated electrical engineers to join SAIEE; the respondents mostly viewed access to events, courses, seminars, webinars and publications as the major benefit. This was crucial to keep up to date with the developments in the electrical industry. CPD activities was also ranked high, since the management and collection of CPD points is regulated to keep the ECSA professional registration. CPD was also viewed to contribute to skills development and career progression of electrical engineers. The level at which SAIEE build professional behaviour of the engineers, was also a crucial requirement for electrical engineers who wanted to join the VPA

Despite the significant benefits provided by the VPAs, participants stressed that there were several challenges that prevented people from joining and participating in this professional body. Cost of membership and the fact that there were no subsidies for membership fees, came on top for factors that demotivated electrical engineers to not join SAIEE. Other respondents felt that the employer did not recognise the VPAs, and thus joining SAIEE had no impact in their careers. In terms of the factors that were demotivating the electrical engineers from participation in SAIEE interventions; the location / venue where the events were held and the time the events were held ranked

amongst the highest factors that demotivated the electrical engineers from participating. To increase membership and improve participation, the respondents agreed that SAIEE needed to find alternative funding options to lower the cost of membership. It was also suggested that SAIEE's visibility should be improved, marketing and social presence, especially at academic institutions. The next chapter provides a summary, conclusions and recommendations based on the findings in this chapter. Due to the delimitations of this study, the next chapter also has recommendations for future study research in this topic.

## **CHAPTER 5**

### **CONCLUSION, SUMMARY AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter, being the final chapter, draws conclusions, makes recommendations, and identifies areas for future research. The research problem is revisited, and the summary of the preceding chapters is discussed briefly. The research methodology and the objectives are briefly re-stated and conclusions are drawn based on the study findings. Conclusions are made based on the analysis and findings obtained from the results of the research and recommendations are made for future research.

#### **5.2 Research problem and rationale explained**

The South African Institute of Electrical Engineers (SAIEE) Western Cape (WC) centre has over a sustained period of time recorded a decline in the participation of members in its initiatives and, in the uptake of new membership. These membership numbers fluctuated due to cancellations and transfers between provinces. This phenomena of both low participation and low uptake of membership triggered the interest to investigate what could be the contributing factors. The research problem of this study was therefore: despite the advantages associated with membership of SAIEE and participation in the initiatives of the association, a large proportion of electrical engineers were not taking up membership and a significant proportion of members did not participate in its initiatives and interventions. This is particularly significant as the SAIEE is a non-profit organisation with voluntary membership. Several studies have been conducted to determine why professionals in other professional fields (education, accounting, and information technology) either join or do not join and why they participate or do not participate in voluntary professional associations. However, there is little literature on this phenomenon in the field of electrical engineering in South Africa.

#### **5.3 Summary of chapters**

The literature review conducted in chapter two indicated that there have been studies on voluntary professional associations but, there was limited evidence of studies done in the field of electrical engineering in South Africa. It has been established that electrical engineering is one of the industries that play a critical role in supporting the growth and

development of a country's economy as well as in improving the quality of life for citizens. A review of the literature emphasised the following: 1) the importance of voluntary professional associations in providing quality training and development for engineers, 2) the different factors that contribute in shaping the decision whether to join or not to join professional voluntary associations in general; and what motivates them to participate or not to participate in the interventions organised by the voluntary professional associations. Chapter three provided the research methodology and design approach deployed in the study. The results and analysis of the findings of the study were covered in chapter four.

#### **5.4 Objectives of the study revisited**

The main objective of the study was to examine factors that influence electrical engineers (not) to take up membership and [not] to participate in the interventions of the professional voluntary association SAIEE.

The sub-objectives supporting the main objective were:

- ❖ To make recommendations on how to attract members into SAIEE and retain them.
- ❖ To recommend how SAIEE can improve participation from electrical engineers.

The main research question for the study was:

What are the factors that de/motivate electrical engineers from/to take[ing] up membership and, what de/motivates them (not) to participate in the activities of the voluntary professional association called SAIEE, in the Western Cape (WC)?

The supporting sub-questions to address the main research question were:

- ❖ What can SAIEE do to attract and maintain members?
- ❖ How can SAIEE improve the participation of electrical engineers in its activities and interventions?

#### **5.5 Research methodology revisited**

Primary data was collected using both online questionnaires for the on-line survey, and in-depth on-line focus group interviews. Secondary data collection was achieved by means of available literature, particularly that on professional associations in the form of

on-line academic journals and textbooks. The on-line survey was distributed by email and was administered through the SurveyMonkey® platform. The online survey was the most viable option for this study because the researcher was dealing with people who are in different companies that are far apart from each other within the Western Cape. Due to Covid restrictions and country regulations, the focus group interviews were conducted online too, using Microsoft Teams. The study followed a mixed method approach.

## 5.6 Findings

It was discovered that joining a professional association like SAIEE comes with incredible benefits. These range from capacity development, which includes having access to training materials or a variety of resources, as well as being exposed to training and development that contributed to advance knowledge, and skills. The results indicated that there are those electrical engineers who consciously take up membership and participate in interventions organised by SAIEE to harness their skills and accelerate their professional growth, even though there was a concern about the cost of membership. This was evident from the recorded 66% respondents who were members of SAIEE versus the 34% who were non-members. SAIEE was found to serve as a useful platform for learning by participants from different streams of electrical engineering. High registration fees for membership and affordability were identified as a main challenge for the electrical engineers who wanted to join the VPA. The locations where meetings were held, coupled with the time when the meetings were held were perceived to be inaccessible, particularly for those who were traveling by public transportation. This was a deterrent for those people who wanted to participate in interventions organised by SAIEE. The participants expressed concerns around the benefits SAIEE provides for their career development. The 58% of the respondents indicated that employers do not recognise membership to SAIEE as a motivation to promote individuals, while some indicated that for the aged electrical engineers nearing retirement, there were no perceived benefits to being a member of SAIEE. The participants expressed their concerns around SAIEE visibility and how it was marketed. It was revealed that SAIEE was not marketing itself enough especially at the academic institutions where the newly appointed electrical engineers will come from. They recognise that SAIEE was only visible to traditional universities like Stellenbosch University (SU) and the University of Cape Town (UCT), while Universities of Technology (UoT) students were unaware and had no knowledge or understanding of the professional body. They also suggested that



the visibility of SAIEE was minimal to those in the working environment. Participants felt that the engineering field can be isolated where people are working in silos without interacting, and membership of associations such as SAIEE was useful in dealing with the challenge of isolation and may also create opportunities for mentoring.

## **5.7 Recommendations**

Participants suggested several factors that can help increase participation, among which was SAIEE's presence in Universities of Technologies, more engagement or better advertising, and alternative funding options for courses. Training of trainers, the use of e-learning and other funding avenues were seen as alternative approaches that could reduce the training costs. Participants also felt that it would be beneficial if SAIEE uses the technology (internet) to supply on-line training. This would greatly improve participation in interventions.

It was suggested that to attract members, SAIEE should work to restructure its fees to accommodate electrical engineers who have started working but may not be able to afford the high fees. The respondents felt that if more meetings could be held at the academic institutions, where the target audience would be students who were soon to become electrical engineers, participation and membership would be improved. Participants recognised the need for partnerships and collaboration with other big industry players to better coordinate the value offered by SAIEE and to ensure alignment to the industry needs. This would increase both membership and participation. The participants recognised the importance of networking with other people within SAIEE to become more knowledgeable about the benefits of the association. Engaging in mentorship programmes would allow information sharing and for newly employed engineers; therefore, there is a need for SAIEE to promote themselves and be more visible, particularly to young engineers and professionals w perspectives and enhanced knowledge and skills to be gained.

## **5.8 Future research**

The delimitations of this study were listed in chapter one as the geographical location. For instance, the population was drawn from those electrical engineers who resided in the Western Cape, both members and non-members. By default, the participation would be limited to SAIEE's WC Centre.

Future studies could look at the other SAIEE centres around SA, in the different provinces. The other studies could also look at the electrical engineering students' involvement with the SAIEE's student chapters at the various universities. A comparative study could be done to determine the differences and similarities between the voluntary professional associations recognised by ECSA supporting the chemical, mechanical, civil, and other engineering fields. This study would draw similarities and contrasts of the behaviours across the different engineering groups.

Other future studies could look at how the age, gender work experience affect the decisions to join VPAs.

To bridge the gap between SAIEE and the electrical engineers, it would be interesting to investigate the expectations of the electrical engineers and evaluate the value of the membership.

## **5.9 Conclusion**

In conclusion, the study successfully achieved the objectives. All the research questions were answered. The completed report will be submitted to SAIEE for consideration, and the association will be able to make deliberations on the findings of this study. SAIEE management will decide on how to implement the recommendations from this study.

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## APPENDICES

### APPENDIX – A : Questionnaire Cover Letter

Dear Participant

You are kindly invited to participate in a research study being conducted by Nolufefe Ngalonkulu from the Cape Peninsula University of Technology. The survey is part of a research project towards the completion of the **Masters of Technology Business Administration** degree which will be submitted to the **Cape Peninsula University of Technology**.

The attached questionnaire represents a survey of electrical engineers working in Western Cape. The study intends to investigate the factors that impact on membership and participation in a selected electrical engineering voluntary professional association in the Western Cape, South Africa. The main objective of this study is to determine the factors that de/motivate electrical engineers from/to take up membership of and participate in the interventions of the voluntary professional association called SAIEE, in the Western Cape. This study should make a contribution in the generation of literature on why electrical engineers do not or join voluntary professional organisations such as SAIEE and why some members do not or participate in the interventions of such organisations. In so doing, the study may offer useful recommendations on how such organisations can make themselves and their interventions more attractive. You are assured that all information will be treated confidentially and your participation in this study is voluntary. Should you wish to withdraw for any reasons at any time during the study, you are welcome to do so without any objection to your decision. All findings will be dealt with anonymously. You are also allowed to omit any questions you don't feel comfortable answering.

Instructions are provided on each page of the questionnaire and should take between 10 and 15 minutes to complete. Your cooperation which is crucial to the study and its success will be appreciated. Thank you for your cooperation.

Yours faithfully

Ms Nolufefe Ngalonkulu

Mobile: 083 940 4010

Email: [nkumbzo@gmail.com](mailto:nkumbzo@gmail.com)

**APPENDIX – B : On-line questionnaire**

**Demography**

Tick or cross next to the option that applies to you

<b>Sex</b>	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>						
<b>Age</b>	Under 25	<input type="checkbox"/>	26-35	<input type="checkbox"/>	36-45	<input type="checkbox"/>	46-55	<input type="checkbox"/>	56+	<input type="checkbox"/>
<b>Marital Status</b>	Married	<input type="checkbox"/>	Single	<input type="checkbox"/>						
<b>Work Experience</b>	0-8 years	<input type="checkbox"/>	9-25 years	<input type="checkbox"/>	over 26 years	<input type="checkbox"/>				
<b>Type of Employment</b>	Hired	<input type="checkbox"/>	Contract	<input type="checkbox"/>	Self-employed	<input type="checkbox"/>	Pensioner	<input type="checkbox"/>		
<b>Level of Education</b>	Diploma	<input type="checkbox"/>	Degree	<input type="checkbox"/>	Masters	<input type="checkbox"/>	Doctorate	<input type="checkbox"/>		
<b>Current role</b>	Technician	<input type="checkbox"/>	Engineer	<input type="checkbox"/>	Manager	<input type="checkbox"/>	Executive	<input type="checkbox"/>	Pensioner	<input type="checkbox"/>
<b>Location in Western Cape</b>	Cape Town	<input type="checkbox"/>	Winelands	<input type="checkbox"/>	West Coast	<input type="checkbox"/>	Karoo	<input type="checkbox"/>	Garden Route	<input type="checkbox"/>
<b>Membership with SAIEE</b>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>						

(i) Rank the factors that motivated you to join SAIEE if you are a member		strongly agree (5) agree (4) undecided (3) disagree (2) strongly disagree (1)				
1	The culture of SAIEE	5	4	3	2	1
2	The level at which SAIEE builds the professional behaviour of engineers	5	4	3	2	1
3	Access to events, courses, seminars, webinars and publications	5	4	3	2	1
4	Continuing Professional Development (CPD) activities	5	4	3	2	1
5	Addresses my areas of interest	5	4	3	2	1
6	Skills development	5	4	3	2	1
7	Many of my friends have joined	5	4	3	2	1
8	Need for growth in my profession	5	4	3	2	1
9	To keep abreast of research	5	4	3	2	1
10	Networking opportunities	5	4	3	2	1
11	My employer paid for the membership	5	4	3	2	1
12	Others: Elaborate on the factors that influenced you to become a member of the SAIEE ..... ..... ..... ..... .....					

(ii) The following are factors that demotivated EEs from joining SAIEE		strongly agree (5) agree (4) undecided (3) disagree (2) strongly disagree (1)				
1	The cost of membership fees	5	4	3	2	1
2	Does not address my areas of interest	5	4	3	2	1
3	Time	5	4	3	2	1
4	Membership will have little or no impact in my career	5	4	3	2	1
5	Many of my friends have not joined	5	4	3	2	1
6	My employer does not pay for the membership	5	4	3	2	1
7	Loss of income during lockdown					
8	Others: Elaborate on the factors that demotivated you not to be a member of SAIEE. ..... ..... ..... ..... ..... ..... .....					

On average how many SAIEE do you attend in a year?

Never

1 – 3 times

4 – 7 times

Above 8 times

(iii) My decision to participate in SAIEE interventions is influenced by		strongly agree (5) agree (4) undecided (3) disagree (2) strongly disagree (1)				
1	Claiming of CPD points	5	4	3	2	1
2	Business opportunities	5	4	3	2	1
3	Profile of the speakers	5	4	3	2	1
4	Topic addresses my areas of interest	5	4	3	2	1
5	Networking opportunities	5	4	3	2	1
6	Location / Venue where the event was held	5	4	3	2	1
7	Keep current with industry news	5	4	3	2	1
8	Requirement from my employer	5	4	3	2	1
9	My employer paid for the interventions	5	4	3	2	1
10	Availability of broadband in my area					
11	Data costs					
12	Others: Elaborate on the factors that drive you to participate in interventions offered by SAIEE. ..... ..... ..... .....					



(iv) I am demotivated from participating in interventions offered by SAIEE because:		strongly agree (5) agree (4) undecided (3) disagree (2) strongly disagree (1)				
1	Time the event was held	5	4	3	2	1
2	Topics do not address my areas of interest	5	4	3	2	1
3	Profile of the speakers	5	4	3	2	1
4	Location / Venue where the event was held	5	4	3	2	1
5	Does not address my areas of interest	5	4	3	2	1
6	None of my friends have attended	5	4	3	2	1
7	Not a requirement from my employer	5	4	3	2	1
8	Travelling to the venues	5	4	3	2	1
9	Data costs					
10	Availability of broadband in my area					
11	Time when webinars/e-conferences are held					
12	Others: Elaborate on the factors that drive electrical engineers not to participate in interventions offered by SAIEE. ..... ..... ..... ..... ..... ..... ..... .....					

## APPENDIX – C : Focus group cover letter

### Dear Participant

I would like to request your participation in an interview/focus group session, on MS Teams, which forms part of a research project for my academic studies. The focus group data collection is a follow-up on the self-administered questionnaire that was completed on-line. The interview sessions will take place between 18:00 – 19:00 on Tuesday 26 April 2022. My focus group facilitator is only available in the evenings.

The discussion points will be on the following:

- ❖ the factors de/motivating electrical engineers from /to join[ing] SAIEE.
- ❖ the factors that drive electrical engineers to (not) participate in interventions offered by SAIEE.
- ❖ to make recommendations on how to attract and retain members into SAIEE.
- ❖ to recommend how SAIEE can improve participation from its members and non-members.

Your participation in this study is entirely voluntary and anonymous. The study data will be coded so that it will not be linked to your name. Your identity will not be revealed while the study is being conducted or when the study is reported in academic/scientific journals. There are no right or wrong answers. I would like to hear your stories and your voices. The focus group interviews are done to elicit detailed descriptions of the feelings and attitudes towards membership and participation in the interventions of the SAIEE. The integration of both quantitative and qualitative data may result in a more comprehensive understanding of the phenomenon under investigation.

If you decide to take part in the study, you will be requested to do the following:

- ❖ You will be requested to participate in a focus group discussion.
- ❖ You are requested to grant permission for the interview to be audio-recorded, to transcribe the findings to the research report.
- ❖ You are requested to indicate your availability on the proposed time, and whether you are a member of SAIEE or not. The focus group participants are limited to minimum of eight and maximum of 12 people.

[Microsoft Teams meeting](#)

[Join on your computer or mobile app](#)

[Click here to join the meeting](#)

[Learn More | Meeting options](#)

APPENDIX – D : SAIEE Consent letter



13 September 2019

I Leanetse Matutoane, in my capacity as Operations Manager at the South African Institute of Electrical Engineers, give consent in principle to allow Nolufefe N. Ngalonkulu, a student at the Cape Peninsula University of Technology (CPUT), to collect data in this institute as part of her Master of Technology research. The student has explained to me the nature of her research and the nature of the data to be collected.

This consent in no way commits any individual member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the Institute's name may or may not be used as indicated below. (Tick as appropriate).

	Thesis	Conference paper	Journal article	Research poster
Yes	X	X	X	X
No				

A handwritten signature in black ink, appearing to be "Leanetse Matutoane", is written above a horizontal line.

Leanetse Matutoane

**APPENDIX – E : CPUT Ethics letter**



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P.O. Box 1906 • Bellville 7535 South Africa • Tel: +27 21 4603291 • Email: fbmsethics@cput.ac.za  
Symphony Road Bellville 7535

<b>Office of the Chairperson Research Ethics Committee</b>	<b>Faculty: BUSINESS AND MANAGEMENT SCIENCES</b>
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The Faculty's Research Ethics Committee (FREC) on **28 April 2020**, ethics **Approval** was granted to **Nolufefe N. Ngalonkulu (208233989)** for a research activity for **M Tech: Business Administration** at Cape Peninsula University of Technology.

<b>Title of dissertation/thesis/project:</b>	<b>FACTORS THAT IMPACT ON MEMBERSHIP AND PARTICIPATION IN A SELECTED ELECTRICAL ENGINEERING VOLUNTARY PROFESSIONAL ASSOCIATION IN THE WESTERN CAPE, SOUTH AFRICA</b>  Lead Supervisor (s): Dr IK Ticha
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**Comments:**

**Decision: Approved**

 <b>Signed: Chairperson: Research Ethics Committee</b>	<b>28 April 2020</b> <b>Date</b>
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## APPENDIX – F : Focus group transcription

**VN: “Maybe we should start. Over to you FN”.**

FN: “Good evening, everyone. Thank you for helping me with my study. As you know me, my name is FN. I am doing a research for my postgraduate studies at CPUT and this focus group done to supplement the research that I've done over on survey monkeys regarding my research project, to discuss the membership and participation on the SAIEE. So basically, the person who's assisting me with this focus group is VN, who's going to be posing a lot of questions to you guys. Thank you for your assistance, over to you Mr VN.

**VN: “Thanks, FN and welcome colleagues and thank you for making time to attend this this session. You know, tomorrow is a public holiday, so people are usually busy with their own things at this time of the day. Firstly, I would like to check with you colleagues. Did you all receive the discussion points for this session?”**

**VN: “AJ?”**

AJ: “Umm from my side I'm unable to be in front of my PC at the moment so I'm on my phone so yeah, I'll just listen and then I'll respond as well.”

**VN: “OK, am I pronouncing your name correctly?”**

AN: “Uh, yeah, more or less, I think everybody pronounces in their own way. So you're sort of right. Yeah, almost there. Almost there I can accept that. Except that. OK.

**VN: “AN, did you receive the discussion points?”**

AN: “Yeah, yeah, I received. Admittedly, I think I received the previous email. unfortunately, I must admit I haven't. I haven't gone through them in detail you know.

**VN: “NS, are you with us? OK, OK. Did you receive the discussion points, the email with discussion points?”**

NS: “Yes, that's correct.”

**VN: “OK. No, that's fine. Colleagues since there's only three of us, and we now have 40 minutes to go through the discussion points and I will take around. And allow you a minute or three, you know, to respond to each of the of the discussion points. And we will do it, you know, question by question.**

**VN: “Who will start with for this round? For the first question, we will start with NS, then AJ and the AN. The first question was or the discussion point was, what are the factors that are motivating or demotivating electrical engineers from joining SAIEE?”**

NS: “I think for one is visibility. I'm not sure how visible they are in all these institutions. And then also maybe the issue of not being able to afford to pay for these registration fees because they are quite high as well. So they will also have a contribution. Also I feel also in general you know some of these meetings and presentations, they should be held in their institutions.

Where they can easily walk in and participate or

experience the presentations and the contents of the presentations. Maybe they'll also attract them because most of the guys that will be presenting will be from the field so. That's those few points for now that I can think of out of my head.

**VN: “By them being held in institutions, what do you mean? Do you mean facilitated by people who are within that institutions or, regardless of where people are coming, but they must? What do you mean? Can you explain that?”**

NS: “OK, no speaking from the Cape Town/Western Cape Centre, Our meetings and. The presentations. The areas where we have those presentations or meeting points are in awkward areas. For someone who uses public transport. So mine is if you go to institutions, they do have lecture rooms that are big enough that can accommodate everyone. And then if you wanna get to the students it it's within the institution. They can easily walk to the lectures. Or, other institutions can even. Maybe students can arrange transportation from the execution from one institution to the other. But now you will find our venues. I mean even for  
For me, who's in the field working, It's a. They are out of the way. And the times as well are quite awkward. You'll find that after work, you must quickly rush to those meetings or presentations. So there's also a time factor. Yeah, I can list those two for now.

**VN: “OK, you've listed a visibility, affordability, the time factor and that the venues that are normally used are not easily/ are not within reach. You know for those who are and expected to attend.”**

NS: “If I want to reach to students. I must be visible to students. And yeah, that's what I'm trying to highlight.”

NS: “OK. Thank you, Sir, I understand.”

AJ: “Hi, in response to that for me personally. It all comes down to the money, obviously that's number one. I don't think I need to level it too much because I think NS, he highlighted that. But the most important thing for me is: why should I join? Umm, there's no solid reason for me to join, what benefits does the organization have for my career? Umm, like for example if I look at the CA for example if they register with their body it's a massive benefit for them. There's monetary value in it, there's more career prospects there's that so for me. Why? Why would I join SAIEE? I it's for me it's just that, I don't see the purpose for my career. Maybe it's because I haven't been properly introduced to the organization that could also be another factor. There's not a lot of information freely available. I assume that the all platforms, but for me personally, I heard about this organization through FN. For example, I wasn't aware of it when I was a student and I when started working one of the organizations that a lot of people spoke about was ECSA. Which again if I look at ECSA for example it

It really? If I if I could be honest, it doesn't really benefit in my career either so. Yeah, I don't. I just don't see the benefit in it. Umm, I don't know how it's gonna add value to my future. That could be ignorant on my fault, but then I would say that the SAIEE is not really reaching out to a lot of engineers then, because I haven't received any information about the organization as much, but obviously number one would be just a monetary thing we have to pay every year and it's expensive. So yeah, those are my 2 main reasons.

**VN: “OK, so there's nothing attracting you to be to be part of the SAIEE?”**

AN: “Thank you, VN. OK, I think to start with, I think both NS and AJ have stated, clearly some of the reasons which are on my part as well. The reasons why I did not and have not felt motivated to actually join the SAIEE you know, rejoin such a professional organization. Particularly the one to mention, the one side. I think the key thing, is firstly in terms of when one looks at it, say that if I take even from the time when I had also just graduated as a as an electrical engineer. A question which I asked myself was, for what? For what reason, or what specific benefits in terms of my job or what I was doing at the time and for my career, as an electrical engineer. The second key reason was also at the time, but really when one is perhaps newly graduated and you at the time actually I was still though undergoing, some practical apprenticeship training sponsored so I wasn't earning very much actually more like a student doing some practicals. So certainly from the point of view of the fees that one has to pay. That was, high even in the first years when now actually got a full time job and was working as electrical engineer. But I think that was that was a the disincentivizing factor, the fact that paying those still

quite a large fees you know compared with one's budget and so on. But I would question myself what I what am I getting from it, you know except for some publications things sent to me. I couldn't see a benefit in terms of my career it was not stipulated as a requirement in terms of my career at any stage of promotions specifically membership of the SAIEE. It was more sort of a bit like a status or privilege kind of thing, perhaps to say and well boasted, sometimes that you're a member of the SAIEE, but there wasn't practical benefit or in terms of my career. Yeah, my job that I saw in it, I will say as opposed to.

Umm, just to say for example as well the in the organization I was working for the for the for example with ECSA with ECSA. Membership of it at one was actually made a condition for moving through a certain level of promotion as a as an electrical engineer, you know, say from just junior electrical engineer to senior electrical engineer so. when that was the case one of the conditions was membership of ECSA. Yeah, I know. Maybe in all aspects, one might not look at that as being correct, but it, it actually the fact that one had to and as part of your career advancement at a certain stage, you will not be able to move further in terms of promotion if you do not have that ECSA registration. So I did, I did at the time you know get that. Umm, you know, and kept it for quite some time. So, so. So I'm just saying that is I think a strong factor, but it's mainly from the career point of view, what benefit or advantages? And if one can't see or if you like, you know, identify or count many then for the money that one has to pay as membership it's, you know. That is what makes it. If you like not one sees it as not being worthwhile."

**VN: "OK. Thank you. Thank you, AN and thanks WP, for joining us. And we are still on discussing a point bullet number one, I'm not sure. Can you indicate if you have received the discussion points email that? Explains what we'll be discussing."**

WP: "Yes, good afternoon everybody. Apologies for being late but stuck collecting the kids, so yeah."

**VN: "OK. No, that's fine. Then I can read the question to you and then you can respond. We are looking at the factors motivating or demotivating electrical engineers, engineers from joining SAIEE. So we've heard from NS , AJ and AN and then you can also voice your feelings."**

WP: "With regards the SAIEE, I found that currently there's two drivers, the you've got ECSA and then you got SAIEE. So ECSA requires from us to have CPD points. And ECSA itself doesn't drive any training and development as such, but SAIEE does drive the training and development. So from that perspective, to join the SAIEE and be part of the discussion groups as well as the interventions for training that they do would be a benefit. But in in my vision, the SAIEE and the and ECSA should be one body. I don't see the necessity to have two bodies. Maybe I'm understanding things incorrectly. And also from the SAIEE perspective, is the training interventions going through COVID and all the rest? Could have been cheaper in the sense that the whole country was in and still is in the financial doldrums. And the SAIEE, I'm not sure how many training interventions they had during the COVID period, but when I did inquire, I can remember that the one that I did inquire about, I'll check my emails just to be correct, was still quite fee that we had to pay the presenter or for the training course whereas it was done via teams etcetera. So, the SAIEE should have more of a leverage to be able to arrange training which doesn't cost an arm and a leg to participate in. If you look at the fees that we need to pay for professional bodies like ECSA and the SAIEE as well as then pay a lot of money to attend the training courses. The training courses obviously could be funded via other means like government interventions and so on because. The benefits. of joining the SAIEE for my work outputs, it's not a requirement. The only benefit that they previously was a discount on my ECSA fees and then the other benefit was to be able to have access to some training interventions. So that is that is my perspective. I don't know if I'm answering the question incorrectly, but those are those are my feelings around that at this stage."

**VN: "We will skip the second question. The second question was about factors that drive electrical engineers to or not participate in**



interventions offered by SAIEE. I think that you have addressed that question and visibility, affordability of fees. The time factor and that there's no benefit linked to career development. I mean you have mentioned those, but WP has now come up with a different view that SAIEE does drive training and development. And do you colleagues want to maybe comment do you want to comment on that AN, AJ and NS want to comment on the fact that there is a benefit in being a member of SAIEE in a form of training and development?"

NS: "It's a tough one. I must see. It's a tough one. Look, in terms of the presentations like I say the monthly presentation that they normally conduct, the content is good. You get to learn from the different streams within the engineering sector electrically. So be telecomms heavy current, light current or power you get to get a little bit of knowledge from those presentations. But I wouldn't lie when it comes to career growth, being recognized in the industry. Well, I can tell you right now where I work doesn't matter. It doesn't matter. It doesn't make that much of a difference. So yeah, that's all I'm willing to contribute at this stage."

**VN: "Ok. AJ?"**

AJ: "Sorry about that, I just have some situation right now."

**VN: "OK, let's take AN while we are waiting for AJ?"**

AN: "OK. Thanks. Can. Regard to, if my understanding of your question is correct, VN, in regard to the benefit of being able to get exposure to the training, and development. I would certainly say, I myself, I'm sort of towards the end of my the end of my career. You know I'm basically within like half a year to a couple of years off to retirement so but I have you know over the years you know in terms of in terms of training and developments. Certainly, for newer younger engineers who were just starting engineers or in the industry generally. And those who were going through the earlier and medium phases of their career and development, it's certainly I think it would be certainly particularly, any chances for exposure to good training and development are an advantage. I would say, you know certainly for you know it is an advantage and I think particularly the younger and as I say and also later levels of developments, people who are in those stages. Because as I say myself, now I'm very close to retirement. So, to undergo a lot of training and development now for me, I don't see is for me a major advantage perhaps."

**VN: "NS, I see your hand is up and then I will take AJ after you."**

NS: You can give NS a chance. Then I'll just hit after her.

AJ: I'm sorry colleagues, I just have some challenges. When I heard about what WP was saying, I would say that's a definite benefit. The training and development.

I think that currently where I'm working now, there's not a lot available to engineers, especially in new engineers that come into the business. It's sort of a sinking swim or swim type of situation. I think having an organization that actually provides training would help quite a bit. I've been in engineering now for two years, but prior to that I was a technician for about 6 years. So having the shift/ the mindset shift from actually working in the field as technician moving to engineering where you're doing design work. It is a big shift so having an extra support base from an organization would actually be good. Yeah. So yeah, I think it's a benefit. I just, I never, I never looked at it before like I said. You it's more you have to know people within SAIEE to know what's going on. It's not like it's in your face, you are exposed to the organization and this is what they offer. So yeah, that that I think if they highlight that more and more people will go and join.

**NV: "Thank you, AJ and NS?"**

NS: "The other thing that I forgot to mention, VN, You know, SAIEE as a body was designed for engineers only. It didn't cater for artisans,

technician technologists, hence the name SAIEE. And I feel like that's another thing that will push away students coming from University of Technology, because the name itself of that body it's only highlighting engineers. And if you for go to industry, I can tell you right now there's a clear distinction between engineer and technologist, technician and an artisan. So whilst you have got this body that is supposed to encompass all the people under the electrical engineering, and yet the name. Says SAIEE instead of like. I don't know whether you, get what I'm trying to say. When I speak to the guy sometimes when I go to Tech (University of Technology), they see this body only for engineers. And yet they are technicians or technologist.

So yeah, there is that. It's kind of like discrimination element associated with that name.

**VN: “Thank you. Sir. WP, do you want to say anything about us? NS is saying the name is not inclusive. Do you agree?”**

WP: “Yes, and No. But why I would say yes. The name is inclusive. Remember that. we need to identify what the function is of the body. Now the function is, according to me, is that this this body is there to ensure that the engineers in South Africa are held accountable for decisions that they take at a certain level and are trained according to that level. But also when I, on the flip side of the coin like myself, I am not an engineer. But I need to be able to operate within an engineering environment. So the word Electrical engineering is more generic than just to say engineer. So if I'm in the engineering environment, I need exposure to various Industry technical knowledge so that when I do design work, even though it's not directly applicable to the area which I'm working in, the broader knowledge that you pick up from networking and from doing related training, that's not direct in your line but has got additional benefits of knowing the background to when you're designing in, for example, a building you might not consider things like the material the building is made out of or the air conditioning or, the gaps between the walls for the fire and that type of stuff, which has got nothing to do with electricity, but maybe some of your training interventions dealt with them on a different level. So you would pick up general knowledge which you would apply in your thought, when you're doing another design so that you would know to go and inquire about these other factors that affect your design. So yes, on the one hand, it's applicable to engineers, but we cannot exclude the technical planners which need to understand engineering knowledge on a broader base. Therefore, I see it in a dual function and role at this stage for myself.”

**VN: “OK. Thank you, WP. Colleagues we will combine questions three and four so as to cater for the time we have left as well. Question three and four or we are asking you to make recommendations on how to attract and retain or improve participation of members and non-members in into SAIEE.”**

AJ: “OK. Umm, I think one of the main points that I think we discussed for my perspective is the way the body presents itself to people working in the engineering and electrical engineering environment. I think it needs to, AN and NS mentioned this, the fact that they should be more present at the Techs at the universities more accessible. And for example, I studied at CPUT Belville, none of these bodies never had a representation at the Tech itself. So I think they should start there before they even hit into industry. Yeah, another point that WP brought up was the fact that they have all these training, I mentioned before, I'm coming from perspective. I don't know much about the body itself and hearing that I would say it would be very beneficial for them to actually tie in with our organizations, companies like Eskom, Transnet, wherever and actually engage with these organizations and sort of tie in the training needs of that organization with the body itself somehow to get that linked together. So that the organizations in themselves, because I get the feeling as well that are organizations don't even see the value of the people. That's why it's not a requirement for engineers to be actually registered with the SAIEE so. Yeah. For me, it's really engagement. I think that's that's the main thing. And then secondary. I think it's cause it's a I believe it's a governmental body. You guys can correct me if I'm wrong. They need to somehow restructure the fees and attached to it. I mean, if you want invest in the built environment, in your engineers from a

government perspective, to ensure that we are at a certain level, you know be more engaging and inviting to people because. Just I think that's a major deterrent for most people is it's just the amount of fees it's, it's it, it sounds more like a money making scheme, which I now don't I believe it's not to be, but it does come across that way. I was actually speaking to another colleague of mine two days ago. And he we were speaking about the fact that our ECSA , the sent us the bill, we just had like a loose discussion. The only time we hear from ECSA is the is when we actually have to pay them, that is it. It just seems more like a. Money making thing so yeah. Uh, yeah, those are my points. They need to just represent themselves a bit better.”

**VN: “OK, thanks. AJ.”**

AN: What I want to say has been sort of partly expressed in some of the previous comments, and also from my other co-participants in this discussion. But I think the one key thing if I reflect back on my years of working an engineer in this in this organization is that, on a day to day, month to month, and even year to year basis, as you go through your career and working in the industry you hardly hear, there were a few times whenever in the working space/workspace/when in the working environment, I would hear mention or and or reference to the SAIEE much as I said working in an electrical engineering focused environment in terms of the part of the business that I've been working in. The visibility, and the aspect of being in your face actually of the SAIEE is I think minimal to one in the working environment but also I agree that in terms of SAIEE promoting and making themselves more visible and more seen as something, particularly for young engineers and professionals. while still studying in university and higher education institution in as academic institutions and. Umm. Also in the younger, the earlier years of going into the industry and working and developing. I think that the SAIEE if it were to make itself a lot more visible and in your face on a regular basis. You know, to those professionals in those areas that the that would I think help a lot in my in my view just my thinking high level it would make the significance of the SAIEE as it's seen, by lot of practicing professionals to be I'm certainly I'm at a higher level, significantly higher level than currently where as I say one hardly one hardly hears anything from the SAIEE or as I say I never even see mention of it or for that matter even see any kind of posters or things advertising what benefits the SAIEE could provide to firstly to aspiring engineers to or to engineers who are in the industry, in the period of career growth, the younger years and moving on further, so that visibility and as I say even promoting themselves through being more in one's face that would in my view, that is what would make it certainly a lot a lot more significant. And also as I say, the access to training, those training interventions or access to training and development support, I think once again you know in the for engineers in the younger, younger entering the industry and those in the younger periods of development. And career advancement, advancement. I think it those would be in my view I think a good something that people would be able to see much more the value. To be good. Umm, you know, if you like advertising card as such for the SAIEE for them to promote.

**VN: “Thank you, Sir.”**

NS: Like I said. SAIEE is visible in universities. If you go to Stellenbosch, you ask the students, they will know about SAIEE you go to UCT they will know about SAIEE. But if you go to Cape Tech/CPUT. It's only now that they're starting to know. Why is it so? SAIEE is visible to those institutions. Even the competition that is a SAIEE has annually. Previously historically that competition was between those universities. It's only now that they are starting to accommodate the universities of technologies. So hence I'm saying, is this body was mainly designed for engineers. Now, if you want to be inclusive, you need to now review they make up now of that body, to be accommodative of other universities like your CPUT. Do you understand? Because I, in the committee of the Western Cape, I do go to some of the activities, representing the Western Cape Centre. And when I'm there, I do see the interaction between the students and this body and the students are aware; our main examples is the IEEE body. I've never seen that body at CPUT.

But that body is visible at the two universities, UCT and Stellenbosch, even their committees, some of the lectures and the students are within their committees just like as in SAIEE. So that's why I'm saying is. Yes, they must be visible, but also I like the fact that now they are starting to be inclusive even on the committees itself. They are starting to accommodate those members that are coming from those institutions. But historically that body was mainly meant for engineers.

And unfortunately the content is still centered around engineers. It has not transformed to accommodate everyone. That's my point. Thank you.

**VN: “OK. Thank you, Sir. It sounds like there is a movement, there is a positive movement. WP?”**

WP: “OK, yes, from my perspective you might be missing the point sometimes in connecting with industry with the SAIEE and like I said before that when we start looking at the industry players. We need to understand that the SAIEE as well as I know I am mentioning ECSA a few times, but what my point being is that

all these bodies are supposed to be a driver for technology within the space of electrical engineering or whichever engineering field you're in. But ECSA, the IEEE, Cigre, and SAIEE are partner associations, but when the decisions are made as to how we're going to look into training and educating our young engineers how aspiring engineers, which are now technicians and going to become engineers. The industry benchmark should drive the training and work hand in hand. In other words, what I'm saying is large companies like Eskom, TELKOM, SENTECH, all these companies should have a partnership with SAIEE, where they have their training aligned with what the industry expects of those engineers. In other words, if the SAIEE Training Academy presents a course on wind turbines and solar and generators for ESKOM. Only then it would be safe to say that the other industries like, the CellCs, the VODACOMs, the TELKOMs and SENTECHs would require the same type of training. But instead of making the course so expensive that it can only be afforded by the engineers and approval at a high level to attend the training, if those interventions were in a House and driven by the SAIEE, we could have the train-the-trainer situations where you would educate somebody within that business to do the training, which would lower the costs for training because; maybe I've got it wrong; but we're supposed to be working with non-profit organizations in the sense that previously, it was said that the SAIEE is there to make money, but I think that the SAIEE's goal should be to drive the progress of the people of the country and not just look at it from an economic perspective but from a future growth of the people perspective which would become an economic perspective.”

**VN: “OK. Thank you, Sir. Welcome, HR”.**

HR: “Good evening.”

**VN: “Yes. Evening, HR. We are left with 10 minutes. We are discussing recommendations on to how to attract and retain members and improve participation for both members and non-members for SAIEE, we have discussed factors demotivating or motivating electrical engineers from joining SAIEE and colleagues have mentioned the lack of visibility, the fees are seen as the deterrent effector and also that is also affected by time factor and it has no benefits towards a career advancement and now we are looking at the commendations as to how people can be motivated or encouraged to, to join or to participate in SAIEE, do you want to come in and the voice your opinion?”**

HR: “Thank you, Sir. Good evening all. If I take it back a few years when I initially joined the institute. It was to meet fellow engineers and learn from them stories that they would be telling, and the things that's happening in the industry that is not necessarily part of my field of expertise or my field that I'm working in. So it was an event and meeting place for like-minded people to experience expanded their general knowledge and become familiar with other territories that you don't necessarily get exposed to. Later on when I was working at the national company, it was

clear that they're not too keen on applying for membership in the sense that each person is their own decision, yes from an SAIEE perspective and if put that hat on, is in the process of registering as the NPO. It's not specifically with regards to aiming for financial gain. However, it does build down to sustainability, so it would require new members to join in, existing members to see the benefit of continuing the membership and not just be 1 dimensional. I agree with the previous speaker that the training needs to be accessible to grow in that industry or to grow in any field. However, it's not something that can be funded per se, because the institute is funded by the members. So at the end of the day, yes, the overall overhead cost has been cut to the bare minimum. The operational cost is being cut low and it's up to the individual at the end of the day to see the benefit and contribute. Now what benefits are there, external to what you perceive as your original training and your expansion of your knowledge? Well, that's something that each person needs to address for himself. Meeting up with like-minded people, then going through to institutes, speaking to young engineers and motivating them to actually carrying on with guards to open day that something satisfying. Because I have done that before with regards to the open days. And just as last item, engineers need mentors along the way so that can be also a fairly big motivator in student members to become full members because the membership pool and the mentor pool is available to draw from. Not just necessarily in email, inside the company and itself. Thank you.

**VN: "OK, thank you, HR, colleagues we have 5 minutes left before I hand over back to FN, any parting shots, we will start with NS, AJ, AN, WP and HR. Any parting shots."**

AJ: I don't have any parting thoughts but so, but I just wanted to comment on what HR mentioned in his previous talk about the mentorship and just the meeting other engineers and talking about experiences and things like that. I think because engineering can be so isolated, sometimes that is actually a brilliant thing because if I think of my time as a technician and you would be with other technicians and you'd have fault finding on the network and things like that, you'd come across some strange things that just talking about it to other colleagues so we they can give you insights and just engaging actually improves your knowledge and your skill. And so you develop much faster with human engagement. So I actually think that is a good aspect of that body.

**VN: "OK, thank you, AJ. AN?"**

AN: "I don't really have other parting shots. I think what I mentioned, if they could look at lower cost membership options for those who are just starting up or younger and you know people who are you know not earning as much as you say you know they're experienced and senior top engineers what I'm saying if they could have that variation of sort of lower cost membership options rather than the high fees. The high fees I think is a big deterrent.

**VN: "OK. Thank you, Sir. WP."**

WP: "From my side, as I said before, industry partnerships to ensure that the organization is funded and slotting them in with the industry training needs and sharing the wealth of knowledge from different engineers within an industry. So in other words, the industry identifies the need and SAIEE has got the pool of knowledge to see where it can pull the knowledge from and create an intervention that is for that industry and the individual, should they not need to fork out money to attend the training, the company can then share the cost of developing the training as well as the platform at which to present the training. And also on those platforms, we need to look at digital more often and also the get-together idea of HR and supported by AJ, the individual regional SAIEE branches should market themselves a little bit better in sense that, when I when I first started attending, I used to see ads in the newspaper and adds around ESKOM internally where it was advertised. But lately I don't see that anymore.

**VN: “OK. Thank you, WP.”**

NS: “No, there are no parting shots. I think I've said the mouthful already.”

**VN: “OK, HR.”**

HR: “Yes, thank you very much for organizing this short session. My apologies for the late arrival. Electrical engineers work all hours of the day in case no one here has noticed. In terms of the levels and different classifications, there is essentially the sealed member, which is already a lower grade and the lower membership fee, then the membership fee in itself and senior member and then follow their after. So there is sorry gradings that you go through and then of course the membership benefits and sorry, the membership fees increase with that. From my side, there's also the participation in the regionals, but also now in centers. In other words, if you've got the specific interest in Rotary machines or load protection or whatever the case might be, that has also been established and the new method of communication is predominantly by the chronicles. Alternatively on the website and that both those platforms are currently being attended to market the regional sections and the specialized sections as well.

**VN: “OK. Thank you and thank you, colleagues, for making time to be part of this session. I will now hand the back to FN to wrap to wrap for us.”**

FN: I think we've just we've come to the end of the of the session. I wish to thank you all for the availing yourself, I know tomorrow is a holiday. And I think is it it? It was a blessing in disguise that we had only fewer people. Because I think people were able to express themselves more. And the report, once I finish everything, the report will be submitted to my institution first CPUT. But once everything is wrapped out and they sorted out, it will be made available at SAIEE, and probably will be published in their library. So you should just watch this space. I'll update you guys don't know what on the progress once everything has been finalized by the institution. I thank you all.

**VN: “OK. Thank you. Thank you.”**

FN: “You have a wonderful evening and thank you for your support and enjoy your holiday tomorrow. Thank you.”