AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN GAUTENG, SOUTH AFRICA

By

Thambeleni Richard Hafani

Submitted in accordance with the requirements for

the degree of

MAGISTER TECHNOLOGIAE

in the subject

SECURITY MANAGEMENT

At the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Mrs L van Schalkwyk

March 2022

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ACKNOWLEDGEMENTS

ABSTRACT

The historical and commercial value of museums underscore the significance of implementing adequate security. The historical value is represented by the cultural legacy in works of art, artefacts and books that are transferrable to future generations. The commercial value is reflected by the attractiveness of museums to local and foreign patrons. To preserve the identities, themes and value of museums strong security to mitigate risks should be implemented. The aim of this study was to examine the current security measures for the protection of museums in Gauteng, South Africa in order to develop a Security Model for Museums. To focus on this aim, the following specific objectives were pursued: (a) to evaluate the possible risk exposure of both visitors and museum assets in museums; (b) to discuss the impact of different types of security measures; and (c) to determine the implication of stolen artefacts on museums. To achieve the research objectives, a mixed methods study with an exploratory design was deployed to collect the field data. The purposive nonprobability sampling techniques was used to select the study sample size n=40 respondents comprising museum managers, security officers and curators. The response rate of the respondents was 63% which was adequate for producing valid results. The data collection methods used to gather data were interviews conducted with sampled respondents and observation using an audit checklist. The data was analysed using thematic data analysis and descriptive statistical analysis. The findings on museum risks that affected visitors and museum assets included theft, vandalism, burglary/robbery, fire and flooding. Regarding existing museum security measures, the following measures were identified: organisational factors such as a security plan, security policy, emergency plan, maintenance plan, access control procedures and security personnel. The non-technological security measures comprised security fences and lockable gates, fire equipment and security officers, while digital security technology included CCTV systems, intruder systems, biometric systems and scanning machines. Based on the findings, it was recommended that an integrated, multi-layered security system that should be designed and customised for museums according to their risk particular exposures.

NKOMISO

Matimu na vuxaviselo lebyi ringaneleke bya muziyamu swi tiyisisa nkoka wo humelerisa ku ringanela ka vusirhelelo. Nkoka wa matimu wu yimeriwile hi ndzhaka ya ndhavuko eka vuvumbi na tibuku leti ti nga ha hundziseriwaka eka rixaka leri taka. Nxaviso lowu ringaneleke wu kombisiwa hi vusaseko bya timuziyamu eka vaseketeri va kwala tikweni na va le handle. Ku hlayisa vuako, nkongomelo na nkoka wa timuziyamu vuhlayiseko lebyi tiyeke ku antswisa makhombo byi fanele byi humelerisiwa. Xikongomelo xa dyondzo leyi a ku ri ku xiyisisa mpimaniso wa vuhlayiseko lebyi nga kona eka nsirhelelo wa timuziyamu exifundzeninkulu xa Gauteng, eAfrika-Dzonga ku kota ku simeka nkombiso wa vuhlayiseko etimuziyamu. Ku landzelerisa xikongomelo lexi swiboho leswi landzelaka swi tekiwile: (a) Ku lavisisa makhombo lawa nga ha humelelaka eka vumbirhi bya vaendzi xikan'we na nhundzu ya muziyamu etimuziyamu; (b) Ku kanela switandzhaku leswi hambaneke swa mpimaniso wa vuhlayiseko; xikan'we na (c) Ku lavisisa mahlanganelo yo yiviwa ka swivumbiwa etimuziyamu. Ku fikela mbuyelo lowu, dyondzo yo katsakanya maendlelo lawa nga ni ndzavisiso wa nkhaviso yi vikiwile ku hlengeleta vuxokoxoko. Xikongomelo xa tithekiniki to sampula a xi tirhisiwile ku hlawula sampulu ya dyondzo sayizi ya *n=40* ya lava ku burisaniweke na vona yi katsa timininjhere ta muziyamu, masekhuriti na valanguteri. Nhlayo ya tinhlamulo ta lava ku burisaniweke na vona a kuri makumentsevu-nharhu wa tiphesente leti a ti ringanela ku tswala mbuyelo lowu hanyaka. Maendlelo yo koleka vuxokoxoko lawa tirhisiweke ku hlengeleta byona vuxokoxoko lebyi a ku ri minkambelovutivi leyi nga endliwa swin'we na lava ku burisaniweke na vona lava nga sampuriwa na vuxiyisisi lebyi endliweke hi ku tirhisa nongoloko wa oditi. Vuxokoxoko lebyi byi hleriwile hi ku tirhisa *thematic data analysis* na *descriptive statistical analysis.* Leswi nga kumeka mayelana na makhombo ya muziyamu lawa nga khumbha vaendzi na nhundzu ya muziyamu swi katsa vuyivi, ku onha, vugevenga kumbe ku khutaza, ndzilo na ndhambi. Hikuya hi mpimo wa vusirhelelo bya muziyamu lebyi nga kona, mimpimo leyi landzelaka yi tekeriwile enhlokweni; mintlawa leyi fanaka na pulani ya vuhlayiseko, nawu wa vuhlayiseko, pulani ya swa xihantla, pulani ya nhlayiso na mafambiselo ya lava nga ni mpfumelelo wo nghena eka vuako xikan'we na lava thoriweke ku sirhelela ndhawu yoleyo. Mimpimo leyi nga riki ya thekinoloji ya vuhlayiseko yi katsa darata ya nsirhelelo na

tikhoro to khiyeka, switirhisiwa swo timela ndzilo na vatirhi vo sirhelela, loko vusirhelelo bya thekinoloji byi katsa tisisiteme ta CCTV, tisisiteme ta vatluri va nawu, tisisiteme ta tibayometiriki na michini yo xiyaxiya swinene. Hikuya hi leswi kumiweke ku nyikiwile mavonelo ya leswaku sisiteme leyi vuriwaka *integrated security system* leyi nga na tileyara to tala yi fanele yi dirowiwa no tolovetiwa eka timuziyamu hikuya hi ku humelela ka makhombo.

Maritonkulu ya nkoka: Mpfumelelo wo nghena eka muako, mimpimo ya nhluvukiso ya thekinoloji, makhombo ya muziyamu, mimpimo leyi nga riki ya thekinoloji, mimpimo ya mintlawa ya nsirhelelo, ku yiviwa ka swivumbiwa swa muziyamu, modele ya vufambisi bya nsirhelelo wa makhombo, pulani ya vusirhelelo etimuziyamu, mimpimo yo sivela ku yiviwa ka vutshila na ku xiyaxiyisisa ka.

MANWELEDZO

Ho sumbedziswa u ḓo khwaṱhisedzwa tsireledzo kha ndeme ya ḓivhazwakale na vhubindudzi ha midziyamu. Ndeme ya ḓivhazwakale i sumbezwa nga kha ifa ḽa mvelele nga mishumo ya vhutsila, zwivhumbiwa na dzibugu dzine dza fhiriselwa na kha mirafho iḓaho. Ndeme ya vhubindudzi i vhonala nga kha ku kungele kwa midziyamu nga kha vharengi vhadzulaho tsini na vhabvannḓa. U itela u tsireledza vhune, ṱhimu na ndeme ya midziyamu, ho tea u vha na tsireledzo yo khwaṱhaho u fhungudza khombo ine ya nga itea. Tshipikwa tsha hei ngudo ho vha hu u sedzulusa maga a tsireledzo ane o no ḓi vha hone midziyamu ya Gauteng, South Afrika hu u itela u bveledza tsireledzo yo khwaṱhaho ya musalauno midziyamu. Kha ndavhelelo dza mawanwa, maga o khetheaho o dzhielwa nzhele (a) U sedzulusa arali hu na khonadzeo ya khombo ine i ngavha hone kha vhadali na ndaka ya midziyamu. (b) U haseledza nga ha maṅwe maga a tsireledzo o khetheaho. (c) U wana phendelo malugana na zwivhumbiwa zwine zwa tswiwa midziyamu. U swikelela ndavhelelo dza ṱhoḓisiso, ho shumiswa nḓila dzo fhambanaho u kuvhanganya mawanwa, ho shuma nḓila yo ḓoweleaho ya u kuvhanganya mawanwa fhethu ho vuleaho, mbalo ya vhathu vho dzhenelelaho N=40, ho angaredzwa vhalanguli, vha ofisiri vha tsireledzo na vhashumi vha u vhekana zwivhumbiwa. Dzi phindulo u bva kha vhathu vho fhindulaho ho vha 63% ine iya khwathisedza mvelelo dza vhukuma. Nḓila yo shumiswaho u kuvhanganya mawanwa ho vha nyambedzano dzo itwaho na vhafhinduli vho nangwaho na u tou sedza hu tshi khou shumiswa u tolwa ha ku shumisele kwa masheleni. Mawanwa o viselwa khagala nga nḓila ya u shumisa dzinomboro na maipfi o tou nwalwaho fhasi. Zwo wanalaho nga ha dzi khombo dza midziyamu zwine zwa kwama vhadaleli na zwivhumbiwa zwa midziyamu ho katela u tswa, u tshinyadza, u vunḓa/u homboka, mulilo na miḓalo. Malugana na maga a tsireledzo ane ono ḓivha hone, maga a tevhelaho o topoliwa, sa puḽane ya tsireledzo, phoḽisi ya tsireledzo, puḽane ya shishi, puḽane ya u vusuludza, vhulanguli hau dzhena tshifhaṱoni na tsireledzo ya vhune. Maga a tsireledzo a si a thekhinoḽodzhi ho katelwa ḓiraṱa ya tsireledzo, magethe ane a honela, zwishumiswa zwa u dzima mulilo na vha ofisiri vha tsireledzo hu uri tsireledzo ya didzhithala ya thekhinoḽodzhi yo katela sisiteme ya CCTV, sisiteme ya u fara tshigevhenga, sisiteme ya u biometric na mitshini ya u sikena. Uya nga ha mawanwa, zwo ombedzelwa uri tsireledzo ya sisiteme yo

tanganelaho ya leyara dzo fhambanaho yo tea u olwa ya sikiwa ho sedzwa khombo dzine midziyamu ya nga ṱangana nayo. Maipfi a ndeme: U laulwa ha u dzhena kha tshifhaṱo, maga a thekhinoḽodzhi, Khombo dza midziyamu, maga asi a thekhinoḽodzhi, maga a tsireledzo ya guṱe, u tswiwa ha zwivhumbiwa zwa midziyamu, modeḽe wa u tshimbidza tsireledzo dza khombo, puḽane dza khombo midziyamu, maga au thivhela u tswiwa ha vhutsila midziyamu na u tandulula khombo midziyamu.

CONFIRMATION OF LANGUAGE EDITING

I, Lorinda Gerber, hereby state that I have edited the master's dissertation entitled:

"**AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN GAUTENG, SOUTH AFRICA**" by Thambeleni Richard Hafani. An editing certificate has been attached to validate the expert editing and checking of this dissertation. **Appendix D**

DATE: 26/01/2022

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CCTV	Closed-circuit television
CEO	Chief Executive Officer
DAC	Department of Arts and Culture
GDP	Gross Domestic Product
IDS	Intrusion Detection System
NHCSA	National Heritage Council of South Africa
NPS	National Park Service
ROI	Return on investment
SACO	South African Cultural Observatory
SAHRA	South African Heritage Resources Agency
SAMA	South African Museums Association
SMM	Security Model for Museums
SAPS	South African Police Service
SAPA	South African Press Association
SRMM	Security Risk Management Model
Stats SA	Statistics South Africa
UNESCO	United Nations Education, Scientific and Cultural Organisation

CHAPTER 1

INTRODUCTION AND MOTIVATION OF THE RESEARCH

1.1 INTRODUCTION

Nations worldwide use museums to preserve their histories and cultural heritage for future generations (Hoang, 2021: 1). Museums provide an important service for the cultural memory of societies and individuals, containing in both the tangible and intangible cultural heritage (Grove & Thomas, 2016: 1). South Africa in particular benefits immensely from several existing museums. It has now been widely accepted that museums play an important role in society. They are not merely spaces where one may go to observe art, a historical narrative, objects of natural science, or some other curiosity. Museums have been active in shaping knowledge for years and are always ideologically orientated. They are useful tools for those who wish to display their power, whether private individuals or nation-states. As such museums have played, and continue to play, an important role in creating and maintaining identities (Strydom, 2017: 7). Apart from conserving and protecting national heritage, museums contribute towards national revenue through tourist visits (Ferika & Murat, 2018: 3). It is therefore important for responsible museum authorities to implement appropriate security measures to protect and preserve the valuable artefacts and documents in the museums. This chapter provides an overview of the background context, the research problem, the research aims and objectives, the research questions and the motivation of the study. The definitions of key concepts, as well as the structure of the dissertation are also outlined.

The South African Cultural Observatory (SACO) (2020: np) reported on the spatial distribution of both public and private museums using Geographical Information Systems (GIS) mapping techniques. The data revealed that there were a total of 327 museums across the nine provinces in South Africa. The spatial analysis compared the provincial spread of museums to population size. The Western Cape has the largest proportion of museums (25%), followed by the Eastern Cape (18%) and KwaZulu- Natal (18%). Gauteng has the largest population, but only 11% of the

museums (SACO, 2020: np). These museums have two dispensations, namely: those established during the apartheid era and others in the democratic epoch post-1994. All these museums tell South African stories, about where we came from, to where we are now. Museums are housed in facilities such as public buildings, on university campuses and special architecturally designed spaces such as Freedom Park in Pretoria, the latter which depicts a boulder (Thangwane, 2010: 6).

The South African Museums Association (SAMA) defines a museum as a custodian of items of ancient days that symbolise culture, military, food and arts (SAMA, 2014: np). The items that are kept in a museum are identified with a particular nation/people. They provide future generations with the opportunity to learn about their nation's history. Similarly, according to Ambrose and Paine (2012: 7), museums are known by the collections or artefacts they exhibit. Benny (2013: 2) also mentioned that museums primarily house artefacts and documents related to their particular themes. A museum may, therefore, cover many themes such as archaeology, military history, espionage, history of technology and environment or specific specialised themed collections, for example, "dolls through the ages" or "cameras", to name but a few.

In South Africa for instance, we have the Apartheid Museum; the Robben Island Museum, the Ditsong Military Museum and many more that are characterised by the exhibitions that are on display (Ambrose & Paine, 2012: 7). Artefacts or exhibitions inform visitors about where the particular nation came from and where it is heading. Almost every nation around the world has its own museums that are established to preserve its history for the next generation to be able to learn about their roots and background history (Ambrose & Paine, 2012: 208). Museums also house libraries and archival storage areas, for example:

> "…the Guggenheim Museum Library and Archive house primary and secondary research resources that inform the museum's exhibitions and acquisitions as well as document its history" (Guggenheim Museum, 2017: np).

The threats posed to museums range from internal employees colluding with criminals to commit crimes in museums, contractors who come on site to repair leakages and

breakages and even terrorists who's focusing their attacks on museums (Art Council England, 2016: 2). A prominent South African artist stole a painting valued at R17.5 million from the Pretoria Art Museum (Ngoepe, 2012: np). In October 2015, a priceless collection of military medals, buttons and badges were stolen from the Talana Museum in Dundee, KwaZulu-Natal. This robbery left archaeology enthusiasts and historians shocked at the loss of such items of historical value to the province and the country (Barbeau, 2015: np).

In Cape Town on 22 May 2012, the theft of eleven valuable Asian ceramic items from a Cape Town Museum was reported (South African Press Association (SAPA), 2012: np). Art Insure, an insurance company, stated at the time that the value of the artefacts or exhibitions is the primary motivating factor for criminals in targeting and stealing items from museums around the world (SAPA, 2012: np). On 18 January 2015, there was another theft of several artefacts (ceramic bowl with flowers, cream ceramic bowl with cherry design on the outside, ivory ornament of a priest sitting, a green and turquoise glass vase with orange flower design and many more) from Gately House Museum in East London, Eastern Cape Province (South African Heritage Resources Agency (SAHRA), 2015: np). Again, on 03 March 2016 criminals broke into a museum and stole two Victorian, Georgian stinkwood dining chairs. This has led to the closure of the museum (Hollands, 2016: np). Cases of stolen artefacts have been reported by museums in all the provinces of South Africa, indicating that this risk is a national challenge that requires a lasting solution. Consequently, that prompted this study to focus on evaluating security measures in museums in the Gauteng Province to develop a Security Model for Museums.

It is important for all nations, especially South Africa, to protect and safeguard their histories and cultural heritage that are preserved in the different museums around their countries. South Africa has a rich history well worth preserving in museums. This history necessitates and requires heritage authorities to always provide adequate protection, specifically for the benefit of future generations (Ambrose & Paine, 2012: 20). Heritage sites are some of the means that have been used, post1994, to construct a new South African identity for the newly democratic South Africa. This can be achieved by ensuring that damage and vandalism to and the theft of artefacts from

museums is always prevented or kept to a minimum. Another issue of national concern is that the annual crime statistics of the South African Police Service (SAPS) do not reflect art and heritage crime as a separate specific crime category. Such thefts are merely reported as thefts of household items (Durney & Proulx, 2011: 16). The decision to minimise damage, vandalism and theft of artefacts can be achieved by placing the correct and situational requisite security measures at the right place at the right time.

1.2 BACKGROUND TO STUDY

According to Tourism South Africa (2016: 406), the tourism industry has grown in recent years to become one of the major contributors to the country's Gross Domestic Product (GDP) and job creation. Adv. Mancotywa, Chief Executive Officer (CEO) of the National Heritage Council of South Africa (NHCSA), while addressing a conference on promoting cultural diversity in South Africa in 2011, stated:

> "It is well documented that many of our museums and other heritage resources, some of which have attained World Heritage Status such as Robben Island and Mapungubwe, drive tourism in South Africa and attract a lot of tourists thereby immensely contributing to socioeconomic development" (Mancotywa, 2011: np).

It is important to note that the role of museums in tourism and hospitality development cannot be underplayed. According to Statistics South Africa (Stats SA) (2020: 6), in the Tourism report for 2020 released by Stats SA, indicated that foreign arrivals dropped by 71% from just over 15, 8 million in 2019 to less than 5 million in 2020. The COVID-19 pandemic clearly impacted the tourism industry quite severely around the world and in South Africa, mainly due to the lockdown and travel restrictions that were imposed. The overall number of travellers (arrivals and departures) decreased by 71,0% between 2019 and 2020. The overall number of travellers decreased by 50,7% over a 15-year period from nearly 24,6 million recorded in 2006 to 12,1 million travellers recorded in 2020.

A comparison between tourist visits in February 2018 and February 2019 showed that the volume of tourist arrivals and departures increased for foreign travellers. The number of travellers in transit increased for South African residents but decreased for foreign travellers. In February 2019, foreign travellers; arrivals increased by 2,1% (from 1 181 071 to 1 205 901), departures increased by 0,6% (from 1 049 469 in February 2018 to 1 055 331 in February 2019), and transits decreased by 0,4% (from 47 632 in February 2018 to 47 438 in February 2019) (Stats SA, 2019: 4). In South Africa, the direct contribution of the tourism sector to GDP (Gross Domestic Product) was R130,1 billion in 2018 and constituted nearly 3% direct contribution to GDP. In 2018, the tourism sector contributed about 4,5% of total employment in South Africa. In 2020, the volume of tourists decreased by 72,6% from 10,2 million in 2019 to 2,8 million in 2020. The distribution of tourists by region of residence shows that 74,8% of the tourists who arrived in South Africa in 2020 were residents of the Southern African Development Community (SADC) countries and 1,5% were from 'other' African countries. These two sub-regions constituted a total of 76,3% of tourists from Africa. Residents of overseas countries made up 23,6% of the tourists (Stats SA, 2020: np).

Ambrose and Paine (2012: 21) observe that many people around the world visit museums because they want to learn about how particular nations/people live and how they have been living over the years. It has also been noted that when tourists plan their trips to different countries, museum visits are always on the top of the list of attractions to be visited (Indaba South Africa, 2013: np).

The estimated total foreign tourist expenditure increased by 25.8 percent between January-June 2015 and January-June 2016 from about R10 billion to R39 billion (Tourism South Africa, 2016: np). In 2018, the total spending within the borders of South Africa of non-resident visitors comprising of tourists and same - day visitors were R120 billion. Tourists spent money on accommodation, food, transport and recreation. This demonstrated the significance of the contribution made by the tourism industry to the growth of the South African economy (Stats SA, 2020: 20). This increase includes both local and international tourists visiting places such as museums, heritage sites, game reserves, National Parks and other attractions in South Africa (Stats SA, 2020: 19).

SAHRA as the implementing agency of Department of Arts and Culture (DAC), plays a critical role in the identification, conservation, protection and promotion of South Africa's heritage resources for present and future generations (Ngcobo, 2015: np). On 23 May 2017, during the Department's budget vote speech in Parliament for the 2017/18 period the Minister of Arts and Culture, Nathi Mthethwa, stressed the importance of museums for the country by emphasising the need to strengthen the policy environment for heritage protection, preservation, promotion and transformation (DAC, 2017: np). This indicates the serious intent by the South African Government to ensure that museums are functional and kept relevant to present and future generations.

When tourists visit museums, they are attracted by the different types of art collections and artefacts and if such assets were to be stolen from these facilities, visitors would have no real reason for or interest in touring such museums due to the lack of exhibitions and artefacts. If tour operators become aware that a particular museum has had exhibits or artefacts stolen, damaged or vandalised, they are likely to take the tourists elsewhere. Many museums depend on gate takings or walk-ins for revenue, and without visitors coming in, their financial base and sustainability is depleted, thereby threatening the continued existence of such facilities (DAC, 2017: np).

In January 2008, the Minister of Arts and Culture, Pallo Jordan, in his parliamentary address, expressed his deepest concern about the rise of criminal activities in museums around the country, that had led to the theft of artefacts and heritage objects (DAC, 2008). On 6 August 2013, an artefact 'Sorcières au Balais' by Salvador Dali disappeared from the municipal art gallery in Mbombela, Mpumalanga Province. The disappearance of the artefacts coincided with a spate of museum thefts in other provinces such as the Eastern Cape (Roodt & Benson, 2015: 7).

In the light of the high level of risks, like theft and vandalism of artefacts as well as, damage to museums assets through fire and other natural disasters there is a need to implement different security measures to safeguard museum's staff, assets, visitors, libraries and archival storage rooms (Kuzucuoğlu, 2014: 277). Many museums are confronted by the reality of art theft which renders those museums

ineffective and on the brink of closure. It can be the poor placing of security measures in and around a museum that provide criminals with the opportunity to steal from museums (Kuhar, 2018: 207). In 2013, the Arts Council of England, revealed that artefacts may be stolen from museums because of their intrinsic financial value or by virtue of being pieces of desirable art. The Council emphasised the role of effective risk assessment of art collections from both a historical perspective and why they may be attractive (valuable) to criminals (Arts Council of England, 2013: 1-2).

A comprehensive security system should include policies, procedures, personnel and hardware to safeguard museum collections from losses due to crime, negligence, fire or other disastrous situations (National Park Service (NPS), 2019: 9:1; Tomaštik, Vichova, Hoke & Pfeffer, 2018: 4). The security system for museum collections should comprise of two principal objectives, namely:

a) to protect artefacts and their related records from the risk of theft, and

b) to safeguard documentation related to collections, such as accession records, catalogues, photographs and other operational and management reports (NPS, 2002: 9:1; Tomaštik et al, 2018: 1).

It was against such a background of the risk prevalence that museum security becomes a priority in order to ensure the protection of artwork, as well as the safety of personnel and visitors in museums. This can be achieved by establishing a strong partnership between museums, security staff and police services so that the scourge of crime in and around the museums can be curbed. There is, therefore, a need to safeguard staff and tourists visiting museums from the theft of their personal possessions, armed robbery, bag snatching, smash -and -grab (from vehicles), assault and malicious damage to their properties (Grove & Thomas, 2016: 3).

1.3 PROBLEM STATEMENT

Art theft is a global challenge, with criminals targeting museums around the globe to steal art collections and artefacts. In October 2012 the theft of five valuable paintings from the Pretoria Art Museum made headlines in South Africa. These unique paintings included: Irma Stern's *Fishing Boats* (1931), worth R9 million, and Gerard Sekoto's *Street Scene* (1939), worth R7 million. The thieves arrived with a 'shopping list' and demanded specific items, which also included: Laubser's *Cat and Petunias* (1936), valued at R1 million, J.H. Pierneef's *Eland and Bird* (1961), valued at R45 000 and Hugo Naude's *Hottentot Chief*, worth R300 000 (Gambrell, 2012). The Pretoria Art Museum authorities revealed that at the time of the robbery, the CCTV cameras were not working, thus raising security concerns for museums. However, such incidents are not confined to Gauteng (Benson, 2013: 21).

In 2014, the Eastern Cape had a spate of reported museum thefts. Unfortunately, museum crime does not receive public attention and tends to be overshadowed by the high levels of violent crime in South Africa (Ncokazi, 2014: 23). Further, it is alleged that museums often under- report theft, since they are hesitant to publicly highlight their lack of proper security. They are also careful not to place relationships with their donors and potential donors at risk (Benson, 2011: 24). Between 2011 and 2016 there were seventeen (17) cases reported to SAHRA involving heritage crime and art collection theft in the Gauteng Province alone (SAHRA: 2016: np).

The thefts of artefacts deprive future generations of ever being able to view, in person, works of art, since these thefts are likened to the stealing of a persons' history and/or cultural heritage. Another issue of concern is that museum art collections, by their very nature, cannot be insured as such, since once stolen they are irreplaceable in terms of their artistic value, thus, insuring them is only important for monetary compensation. Yet, the risk of theft of museum artefacts and collections is not only about the monetary losses; it also threatens the collective memory of a societal heritage, its history and ultimately social cohesion (Durney & Proulx, 2011: 16).

1.4 RATIONALE OF THE STUDY

It is indeed crucial for museum leadership and management to institute measures to protect the assets and collections of all museums for future generations. According to Benny (2013: 1) to ensure an effective transfer of cultural knowledge from one generation to another, the knowledge must be preserved at cultural sites such as museums, historic sites, archives and libraries that protect and maintain the records of nations and societies. There is no doubt that the protection of museum assets and artefacts is of the uttermost importance since most museum items are irreplaceable. Benny (2013: xvi) further indicates that management should make the decisions about what protective methods will be most valuable to them based on the type of property, location, threat assessment, collections, budget and state laws applicable to each museum.

The high risk of artefact and art collection theft and the vandalism of museums, archives and cultural heritage sites has prompted the need to protect the irreplaceable and priceless items as well as the facilities. Therefore, suitable museum security measures must be implemented to protect and safeguard all important museum assets and museum visitors. The current study intended to devise museum security systems to safeguard artefacts and art collections to protect museum legacies.

1.5 RESEARCH AIM AND OBJECTIVES

1.5.1 Aim
The proposed study aimed to examine the current security measures for the protection of museums in Gauteng, South Africa to develop a Security Model for Museums.

1.5.2 Specific objectives
To achieve this aim, the researcher formulated the following specific research objectives:

    i)   To evaluate the possible risk exposure of both visitors and museum assets in museums in Gauteng, South Africa.

ii)   To discuss the impact of different types of security measures implemented by museums in Gauteng, South Africa, *vis-a-vis* shortcomings and inadequacies identified.

iii)   To determine the impact/implications/significance that stolen artefacts have for South African museums.

iv)   To develop a Security Model for Museums in order to ensure the effective protection of museum facilities.

1.6 RESEARCH QUESTIONS

The research study sought to answer the following primary research question:

Which security measures are currently being implemented to protect museums in South Africa?

To answer the primary research question, several ancillary/secondary research questions were also be posed, namely:

i) What are the possible risks that both visitors and museum assets are exposed to when visiting museums in Gauteng, South Africa?

ii) What is the impact of the different types of security measures implemented to protect museums in Gauteng, South Africa?

iii) How does the theft of artefacts negatively affect museums in South Africa?

1.7 MOTIVATION OF STUDY

Museums play a pivotal role in every society by building the national and local identity, where displays and exhibitions from museums reflect substantial traditional cultural values and serve to highlight societal changes. These institutions serve as custodians

of the history of a particular nation or cultural group within a state. The destruction or loss of such history robs future generations of the opportunity to know what happened in the past (Ambrose & Paine, 2012: 7). The results of the current study would potentially assist museum management in South Africa to make informed decisions when implementing specific security measures to protect assets, artefacts and other collections found in the museums under their custodianship. Museum security and the protection of staff, visitors, libraries, archival and artefacts must be a priority for every museum irrespective of the size – (big or small) – of a particular museum. Zalud (2005: 1) recommends that security executives ensure that collections of art worth millions of dollars are well guarded while encouraging the public to visit and come within touching distance of paintings, sculptures and other artwork (Zalud, 2005: 1).

In addition, the current study would assist the security managers to effectively perform their duties of protecting museum visitors and museums assets in South Africa, as well as enabling them to make recommendations after a security measures audit of how to upgrade/improve existing security measures. The results of the research will be shared first with participating museums and other museums in South Africa, in order to improve the safeguarding of their assets from theft, damage and vandalism.

The extent of the risks of theft, vandalism, fire and others within museums motivated the researcher to undertake this study to investigate the security systems implemented at museums in South Africa, specifically those in the Gauteng Province, in the hope that the research results will assist in ameliorating the threats to artefacts, visitors and other museum collections.

1.8 DEFINITIONS OF CONCEPTS

As a researcher, the definitions of concepts are essential for the clarification of the use of terms and phrases to provide a common understanding and interpretation of the information thereof. Although the concepts below may have other, different definitions, they were explained according to how they were applied in the current study.

1.8.1. Access control system

Is a measure or group of measures designed to allow authorised personnel, vehicles and equipment to pass through protective barriers, while preventing unauthorised access (Commonwealth of Australia, 2011: 27). Every person seeking to access the museums in South Africa should be having a bona fide reason to do so. Security officers at the entry points should prohibit entry to those visitors, employees and service providers without proper accreditations to access the museums.

1.8.2 Assessment

Assessment is a process that entails identifying risks or security gaps in a particular environment by reviewing the current situation and desired requirements, leading to the generation of a gap analysis report and subsequent recommendations for remediation (Breece, 2010: 8).

1.8.3 Biometrics

Biometrics refers to measurable biological data from human physical attributes or personal behavioural traits used to recognise a person's identity, or to verify the claimed identity, for authentication purposes. Where there is a mismatch between the stored specimen biological data and the information provided by the person access to the facility is denied (Breece, 2010: 10).

1.8.4 Closed-Circuit Television (CCTV) system

In simple terms a CCTV system is an electronic system for the capture of images and their transmission to another location for viewing and/or recording. The most basic CCTV system will consist of cameras and a television monitor(s), but now most will also include a recording device, typically a digital recorder, with these devices having largely replaced older, less flexible, video recorders (Aviva, 2020: np).

1.8.5 Controls

Controls are countermeasures that are implemented in a facility or company to reduce the impact or probability of an identified risk or to detect the event of or impact upon the occurrence of an identified risk. The countermeasures can be classified as detective or preventative in nature, with automated or manual policies, or procedures

incorporated into a process, system, or environment (Breece 2010: 12; Rogers, 2009: 16).

1.8.6 Intrusion Detection System (IDS)

An Intruder Detection System (IDS) is an automated technology designed and implemented to detect and communicate the presence of a person or object in a designated zone. IDS provides the detection element in a security system which holistically deters, detects, delays, and responds (Brooks & Coole, 2019: 1).

1.8.7 Museum

A museum is a facility or building where items from ancient days that symbolise culture, military, food, arts and other items that are identified with a particular nation that are kept, for future generations to learn about their national history (SAMA, 2014: np). A more comprehensive definition was formulated by the United Nations Education, Scientific and Cultural Organisation (UNESCO), describing museums as:

> "…centres for conservation, study and reflection on heritage and culture, non-profit-making, permanent institutions in the service of society and its development, and open to the public, which acquire, conserve, research, communicate and exhibit, for purposes of study, education and enjoyment, material evidence of people and their environment" (UNESCO, 2012: np).

1.8.8 Museum security

Museum security is security for art collections and artefacts, specifically the measures taken to secure them from theft, vandalism and others risks that are imminent in the museums through measures such as access control, parcel control and internal security (Tröh, 2015: 3).

1.8.9 Physical security

Physical security is the application of control measures to prevent or deter attackers from accessing a facility, resource, or information. It can include measures like

physical barriers to gaining access, electronic security and alarm systems, video monitoring, staffed security or other responses (Breece, 2010: 29).

1.8.10 Security Risk Management Model (SRMM)

A security risk management model is a model that is followed by an organisation to solve any security problems at a company, organisation and business or residential premises as and when the need arises (Applied security risk management, 2015: 10).

1.8.11 Return on Investment (ROI)

Return on investment is the benefit obtained by comparing the actual value to the program costs or system costs (Lombaard, 2014: 36). The cost of implementing security measures should not supersede the benefit derived from the existence of the security measures.

1.8.12 Risk

The possibility of injury, loss or environmental injury created by a hazard. The significance of risk is a function of the probability of an unwanted incident and the severity of its consequence (Sinha, 2020: 2). This is a combination of the likelihood of a threat exploiting a vulnerability, causing business disruption, and the possible impact or loss that may result from the business disruption (Breece, 2010: 32).

1.8.13 Risk management

Risk Management is the identification, evaluation, and prioritisation of risks followed by coordinated and an economical application of resources to minimise, monitor, and control the probability or impact of unfortunate events or to maximise the realization of opportunities (Srinivas, 2019: 3).

1.8.14 Risk analysis

Risk analysis is the process involved with the identification and management of any uncertainties or risks that could impact business goals or financial goals. A successful risk analysis starts with accurate identification of risks and threats that an organisation or a project could face. The next step is identifying the severity of these threats and the likelihood of them occurring (Horvath, 2021: np).

1.8.15 Security technology

Security technology can be defined as the introduction of electronic and/or mechanical security components into a security application to reduce risk and assist in protecting a certain area (Rudolph & de Jager, 2009: 2).

1.9 STRUCTURE OF THE DISSERTATION

The structure of the current study was outlined as follows:

Chapter 1 provides the introduction which entails the research background, providing the context of the research study. The research problem statement stipulates the specific research gap identified as the focus of investigation for the study. The research rationale justifies the current study. The research aims and objectives, research questions and the significance of the study are covered.

Chapter 2 outlines the research philosophy, research design, research methods, sampling strategy, data collection instruments, data analysis and ethical considerations. In this chapter, the exploratory and descriptive research designs will be deployed, guided by the nature of the current study. The research process will outline the selection of the study sample, the choice of the data collection methods and data collection procedures. The decision of the research design and strategies aligns with the objective of ensuring data reliability and validity to produce good research results.

Chapter 3 provides an analytical discussion of the literature review, focusing on a theoretical framework and empirical evidence from previous studies. Discussions of empirical studies will be targeted, the theories of technology acceptance, the nature of risks in museums, security measures and the impact of museum risks. Literature discussions will assist in positioning the current study in line with identified research gaps.

Chapter 4 provides the research findings. The discussion of the data collected will be done sequentially; quantitatively for observations based on audit checklists and

qualitatively for interview data. The discussion will pragmatically integrate the quantitative and qualitative results and use relevant literature to validate the findings.

Chapter 5 present analysis and the interpretation of the findings to answer the research aim and objectives. The research results are operationised and validated in the study context.

Chapter 6 presents the conclusions and recommendations of the study. The research findings will guide the research conclusions and the relevant recommendations to improve the identified shortcomings. Directions for possible further security systems studies will be based on research gaps identified from the current study.

1.10 CONCLUSION

This chapter provided an overview of the current study by discussing the research background context regarding the prevalence of the theft of artefacts and art collections in international museums generally and South African museums in particular. The discussion about the research background provided the broad context of the research gap which was ultimately funnelled to the specific research gap that culminated into the problem statement. Empirical research evidence about the impact of the theft of artefacts and other related items on museums and current and future generations was discussed. The chapter outlined the problem statement, research aim, and objectives as well as further narrowing the research focus to provide a clear direction for the dissertation. By interrogating the research questions, the research was dissected to make it researchable. The motivation of the study described potential contributions by the research findings. The structure of the dissertation provided for individual chapters, as well as the definitions of concepts as they related to the current study.

CHAPTER 2
RESEARCH METHODOLOGY

2.1 INTRODUCTION

The previous chapter provided an overview and background of the current study. The introduction provided an understanding of the research context and justifications and importance of the current study. This chapter provides a discussion of the strategy executed to gather primary data towards answering the research problem. The mixed- methods research approach was deemed appropriate for the collection and analysis of the data. A descriptive research design was suitable since the current study investigates security measures in South African museums. The study sample was selected from the sampling frame using purposive non-probability sampling techniques. The data collection methods included semi-structured interviews with open-ended semi-structured questions, checklists and museum records. To analyse the qualitative primary data, thematic analysis was employed for the interview data and descriptive statistics were used for the quantitative data observed. The discussion of the methodology justifies the research strategies and choices made to gather the research data with credibility.

2.2 RESEARCH APPROACH

The three research approaches at the disposal of the researcher included quantitative, qualitative and mixed- methods. According to Kanyemba, Iwu and Allenlle (2015: 75) a quantitative research approach focuses on measuring research variables by using numerical values that are analysed statistically, interpreted and discussed to answer research questions. The reason for taking this approach is to validate any results by using the numbers. Wimmer and Dominick (2014: 12) posit that qualitative research provides understanding from the observation and subjective exploration of reality from the viewpoint of the researcher. Cropley (2021: 7) explains that quantitative data measures numerical data that are manipulated using statistical techniques, while qualitative data focus on providing an understanding of social interactions and situations based on words and that are analysed using thematic or content analysis (Cropley, 2021: 11). Cropley (2019: 111) and Hales (2010: 64) suggests that the

mixed- methods are a pragmatic approach that embraces the good attributes of the qualitative approach and quantitative approach to collect the research data. According to Hales (2010: 13) the mixed- methods approach provides some answers to research through triangulation, particularly data triangulation and methodological triangulation. Neupane (2019: 76) supports that to capitalise on the strengths of qualitative and quantitative data, the mixed-methods approach provides such as balanced research design. Creswell (2012: 535) corroborates that to better understand research phenomena, mixed methods could be deployed to gather and analyse data mixing quantitative and qualitative approaches in a single study. Hay (2016: xii) further alludes those mixed- methods utilises a combination of quantitative and qualitative designs to deductively and inductively analyse the research problem to explain study findings. Plano Clark and Ivankova (2016: 59) share in this research paradigm, researchers combine quantitative and qualitative data gathering and analysis methodologies to comprehend a study problem. In the current study, quantitative data were collected using checklists, while qualitative data were collected using semi-structured interviews to validate the security systems used in sampled South African museums.

The research paradigm for the current study followed the mixed-methods approach. This approach was appropriate since it allowed the researcher to capture the experiences of the responsible museum managers, curators and museum security specialists (units of analysis) with regards to museum security measures (Corbin & Strauss, 2015: 125). On the other hand, the concentration of security measures in museums was measured through data observed through on-site audits using a checklist and museum risk records. The pragmatic paradigm did not only allow the researcher to gain knowledge about the current types of security measures in the museums, but also to explore the effectiveness of the security systems, as well as to determine the effect of stolen artefacts to the institutions. The qualitative primary data was collected using interviews with semi-structured questions, whereas the quantitative data was gathered using observations and museum risk records. Unlike a quantitative study, the sample size of a qualitative study is smaller since qualitative data collection and analysis are normally more time- consuming.

2.3 RESEARCH DESIGN

Welman, Kruger and Mitchel (2010: 94) assert that research is an economic plan that is used to gather research data to investigate the research question, to address the research problem. The study focused on creating new insights and knowledge about museum security systems to minimise the impact of potential risks. According to Leedy and Ormrod (2014: 137), the two common designs applied in a study of social institutions and human behaviour are exploratory and descriptive research designs. This view is supported by Francis (2011: 23) who opines that qualitative research seeks to explore and describe people's attitudes and behaviours about phenomena. Therefore, the exploratory research design seeks to provide new insights, ask questions, and assesses phenomena from a particular perspective. Neupane (2019: 80) distinguishes six prominent mixed methods designs. These designs include the convergent design, explanatory design, exploratory design, embedded design, transformative design, and multiphase design. When applying the convergent design, the qualitative and quantitative research strands run at the same time. Survey data is analysed using quantitative analysis, while interview data is analysed using qualitative analysis. Roomaney and Coetzee (2018: 9) reveal that for explanatory sequential design, the quantitative and qualitative strands of this design are separated but intertwined in this design. Quantitative data is collected and analysed in the first phase, and it has precedence in answering the study questions and subsequently followed by qualitative data collection and analysis. Unlike the explanatory sequential design, the exploratory sequential design commences with the qualitative research process followed the quantitative approach (Roomaney & Coetzee, 2018: 10). In this design, the researchers collect and analyse quantitative and qualitative data using a standard quantitative or qualitative design. The research may add a qualitative strand to the study or vice-versa. The transformative design entails the use of theory, specifically theories that look at social phenomena via a transformative lens. This framework is used to make decisions about the timing, prioritisation, and interpretation of the data. Sequential and concurrent strands are joined over time in a multi-phase architecture (Neupane, 2019: 80-84). The topic under study has received limited research attention in South Africa, hence an exploratory design allowed the researcher to explore new

insights about the subject matter and make recommendations on security measures to protect and safeguard museums.

2.4 DATA COLLECTION METHODS

Welman, Kruger and Mitchell (2010: 198) suggest that qualitative data is collected using two main methods, namely, participant observation or ethnography and indepth or unstructured interviewing. This view is supported by Saunders, Lewis and Thornbill (2012: 318) who state that the most common method used in qualitative data collection is interviews. To gather research information and data for the current study, the researcher used document analysis via a comprehensive literature review of all available documents on the selected topic, combined with semi-structured interviews and observation of the on-site security measures to elicit as much information about security systems applicable to the museum environment. Using a checklist, museum risk records was used to populate the occurrences of museum risks over the last three years, 5-12 years and over 12 years. The interviewing process allowed the participants the freedom to express of their views without being restricted by a set of pre-determined questions and the security measures checklist results validated the interview responses.

2.4.1 Document analysis through literature review

The researcher critically analysed all relevant topic-related literature available from both primary and secondary sources such as prior studies, reports; incident registers; policies and procedures reports (Saunders et al, 2012: 256) in order to collect detailed and comprehensive information on the topic, and to identify gaps and justify the current research study. The researcher collected data from secondary sources, including government publications, newspaper articles, reports and policy documents produced by institutions such as museum art councils.

2.4.2 Semi-structured interviews

The researcher conducted face-to-face interviews with semi-structured questions to gather primary data on the topic from the sampled participants. To administer the face-

to-face interview sessions, the interviewer met the interviewees in environments that were convenient and comfortable for them. Some interviewees scheduled the interviews during their lunch breaks while others preferred to be interviewed after work at their place of employment. Saunders et al (2012: 318-319) view face-to-face interviews as the most satisfying method of conducting interviews, since a specific time, date and place are set aside for the interview. By using semi-structured interviews, the interviewer had the opportunity to probe more deeply into the constructs and gather more relevant and new information (Whiting, 2008: 36). Semi-structured interviewing could be a useful approach for social scientists who want to learn more about people's views, beliefs, and experiences. Nguyen (2015: 39) points out that when gathering huge amounts of attitudinal data or conducting an exploratory study, semi-structured interviews are effective. The current study had few similar previous studies that were conducted about the topic that made the exploratory design using semi-structured interviews suitable. Whiting (2008: 36) suggest that the open-endedness of the question specifies the issue under investigation while also allowing the investigator and the interviewee to delve deeper into some of the themes. When a researcher wishes to: (a) collect qualitative, open-ended data; (b) investigate participant thoughts, feelings, and (c) delve into personal data, semi-structured interviews are an excellent data collection strategy (Nguyen, 2015: 35).

The researcher had the responsibility of guiding the interview process in a way that was not to be perceived as exerting authority over the participants. The purpose of this guidance was to ensure that the questions were open-ended, and the focus remained on sourcing as much information from the participants about museum risks and security measures as possible. The researcher, with the participants' permission, used a digital audio recording device to record the interviews. The interview duration was scheduled for 40 – 50 minutes. There were eleven (11) museum specialists; four (4) security managers; and ten (10) security officers performing surveillance and access control duties at the selected museums that were interviewed to gather the primary data for the current study.

2.5 RESEARCH INSTRUMENTS

The main research instruments used in the current study included an interview schedule, observations guided by a checklist and museum incident reports.

2.5.1 Interview schedule of questions

The researcher formulated and designed a schedule of questions to be applied in the interviews with open-ended questions that were guided by the research questions to achieve the research objectives (see Appendix B for the interview schedule). The interview guide had three main sections, namely: i) museum risks; ii) security measures; and iii) theft of artefacts.

2.5.2 Observation using audit checklist

Creswell and Creswell (2017: 59) posit that observations provide opportunities to discover situations that participants may not disclosure during interviews. Some aspects that the participants may not be aware of can be exposed through observation. Therefore, the second method used to collect the data about existing security measures was on-site observation using an audit checklist. A security measures checklist was a researcher-completed instrument based on a set of criteria that was marked with a 'tick' (√) if available, or with a cross (X) if unavailable. A column for any observer comments was included. The audit checklist was used at all of the selected museums to check what kind of security policy and procedures as well as, security risks and security measures were in place, their shortcomings and to document any actual incidents that had occurred in the last 12 months, three years and five years. The researcher implemented the security measures audit checklist by onsite observation visits at twenty-five (25) sampled museums in Gauteng, South Africa. The audit was a security survey involving critical on-site inspection of current security measures (Greece, 2010: 8).

2.5.3 Review of museum risk records

Museum risk statistics that cover fire, vandalism, floods, theft and robbery were collected from museum risk records. The museum incidents captured spread over the

last three, five to 12 years and 12 or more years. The secondary data helped to confirm the nature and frequency of museums risks that were prevalent.

2.6 POPULATION AND SAMPLING PROCEDURES

The generalisation and credibility of the current study were determined by the correct definition of the population which was followed by the selection of the study sample.

2.6.1 Target population and sampling frame

Given of the target population, statistics reveal that there were about three hundred and twenty-seven (327) museums in South Africa of which approximately forty (40) museums were in the province of Gauteng. These were consistent with what made the entire group of subjects of interest and that the researcher wished to investigate (Sekaran & Bougie, 2014: 265). The sampling frame for the current study comprised the forty (40) museums in Gauteng. The sample was drawn from this sampling frame for the current study. The researcher interviewed the following people at the selected (sampled) museums in Gauteng: (a) museum managers, (b) museum security heads and (c) security experts who specifically deal with museums, archives and libraries, to collect the primary data on the topic from this province.

2.6.2 Sampling procedure

From the forty (40) museums in Gauteng, the researcher conducted sampling to draw a representative sample from the sampling frame that enabled the generalisations of results to the target population. The researcher selected a sample from the population, using a non-probability sampling technique, specifically the purposive sampling technique (Sekaran & Bougie, 2014: 277). Hales (2010: 64) describes non-probability sampling as a technique in which every element of the population has an unknown or non-calculable zero chance of being selected in the sample. The researcher selected the non-probability sampling since it provided an opportunity for the personal judgment of the researcher in the selection of the sample to collect primary data to achieve the objectives of the study (Macmillan & Schumacher, 2014: 237).

The purposive sampling technique allowed the researcher to focus on specific museums that could be easily accessible to the researcher in the Gauteng Province. The selected museums were representative of the various types and sizes of museums to ensure a broad understanding of security systems in the province. The participants selected included museum specialists, security managers and security officers directly responsibility for the security in museums in the Gauteng Province, South Africa. Macmillan and Schumacher (2014: 238) concur with the view that purposive sampling allows key respondents to be selected because of their status, previous experience, and qualities that enable them to possess the relevant knowledge required by the researcher. The relevant participants for the current study were identified using the purposive sampling technique. The key characteristics that informed the selection of participants included occupation and work experience that encompassed involvement in security decisions and operations.

2.6.3 Sample size

A small section of a target population enables the researcher to collect data that is sufficient to achieve the specific objectives of the proposed study (Babbie & Mouton, 2001: 465). Thus, the sample for the current study was selected from a total of forty (40) museums in Gauteng, South Africa. A sample size of twenty-five (25) museums was considered appropriate for the current study. The targeted participants were museum specialists and security managers in charge of policy formulation and implementation and security officers performing surveillance and access control duties. These participants were targeted in the current study because they are directly responsible for museum security and their practical views on security systems provided valuable 'inside' information about security risks. Only one participant (museum specialist, security manager or security officers) was interviewed in each museum depending on the museum organisational structure.

2.7 PILOT STUDY

A pilot study is the first step of the entire research protocol and is often a smaller sized study assisting in planning and modification of the main study (In, 2017: 601). A pilot test of the interviews were conducted with two museum managers and three security

managers who were not part of the study sample. According to In (2017: 601), the essence of a pilot study is to improve the quality and efficiency of the main research study. The pilot study for this study intended to test the reliability and validity of the interview questions to capture the required research data to answer the questions. Doody and Doody (2015: 1074) reiterate that the value of a pilot is to increase the credibility of the study. After the pilot test was conducted, research questions were refined and simplified to ensure a better understanding by the interviewees. The time allocated for each respondent was easily estimated to an average of 50 minutes per interview. The approximate interview time was guided by the time taken by the pilot study's five participants to complete their interviews.

2.8 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Vaismoradi, Jones, Turunen and Snelgrove (2016: 103) observe that the qualitative data analysis process has no definite interpretation and therefore requires repeated return to the data and coding process throughout the analysis process. Data gathered from the interviews were unstructured as most of them were verbatim transcriptions of the interviews (Welman et al, 2010: 211). The recorded interview responses were first transcribed electronically into Microsoft Word documents. Thereafter it was important for the researcher to analyse the content of the transcripts with the aid of computer software for qualitative analysis known as Atlas ti 7.5.4, to understand what had been said by the participants and extract the participants' verbatim responses before any formal analysis and interpretation of the data took place.

According to Vaismoradi et al (2016: 102), there are four logical stages of theme development which includes initialisation, construction, rectification and finalisation. In the *initialisation stage*, there is data preparation that includes interview transcriptions and observation field notes. The researcher is reading and rereading the transcriptions to develop a better understanding of the study. In the *construction stage*, an effort is made to organise codes and compare codes to assign them to each cluster of codes linked to a research question. The *data rectification* phase involves reappraisal of the analysis process to increase sensitivity and reduce premature and incomplete data analysis. The last phase, the *finalisation phase* entails the narration of the connected

themes that answers the research question (Vaismoradi et al, 2016: 103-180). Accordingly, the researcher used thematic data analysis to derive themes from the data. Data was themed, categorised and coded according to the responses of the participants and analysed to form a coherent picture of the data findings (Welman et al, 2010: 211-221). The stages of qualitative data analysis supported by Clarke, Braun and Hayfield (2015: 230) include familiarisation, coding, searching for themes, reviewing themes, defining themes, and writing-up the report. The familiarisation phase entails the allocation of adequate time by the researcher to thoroughly read interview transcriptions to have a good understanding of the data. Clarke et al (2015: 31) point out that direct quotations are identified and labelled in line with the research questions. The data coding involves the grouping of similar statements that provide data pattern. To formulate themes, a clear and plausible thematic map is created. The data coding is captured on the thematic map to build unique themes. Themes for the current study were informed by the coded data from the verbatim responses of participants (Clarke et al, 2015: 236). Defining of themes is a useful phase in elaborating themes in progression to the writing up of the results. Fairly short descriptions explaining the essence, scope and coverage of each theme were provided. According to Clarke et al (2015: 241), the final stage of the analysis process involves writing the final report to enable the researcher to draw conclusions from the findings.

Data collected from observation of security measures (using an audit checklist) was analysed quantitatively using descriptive statistics. The frequencies of the security policy and procedures, security measures and risks common in museums were presented in frequency tables for easy interpretation. The interpretation of the statistics results was validated against the comparative thematic analysis results from the interviews to answer the research questions.

2.9 VALIDITY, RELIABILITY AND ACCURACY OF COLLECTED DATA

Validity is defined as the extent to which a concept is accurately measured in a quantitative study (Heale & Twycross, 2015: 66). Although reliability and validity are regarded as separate terms in quantitative research, qualitative studies focus on trustworthiness which relate to validity and reliability. The researcher ensured validity

of the research instruments to promote the correctness of the interpretation of data and its alignment to the desired outcomes and context (Leedy & Ormord, 2016: 28). To increase the validity of the research findings, the researcher instituted different research instruments such as a semi-structured interview schedule and a security audit checklist. Further, the researcher also referenced the findings of the study with the theoretical framework of previous related/relevant studies for validation. On the other hand, reliability was performed to assess the accuracy and precision of the data collection instrument to produce the same results in a repeat study (Leedy & Ormord, 2016: 29).

There are four concepts that underpin the trustworthiness namely, credibility, transferability, confirmability and dependability. The qualitative researcher's level of confidence in the accuracy of the research study's findings is referred to as *credibility* (Gunawan, 2015: 10). In the current study, the researchers utilised data triangulation to demonstrate that the findings of a research study are reliable. The qualitative researcher exhibits *transferability* by demonstrating that the findings of the research study can be applied to other situations and is viewed as external validity. Gunawan (2015: 10) mentions that the degree of neutrality in the research study's conclusions is referred to as *confirmability*. The researcher provided an audit trail to prove confirmability by highlighting each phase of data analysis and providing an explanation for the judgments made. The degree to which the study might be replicated by other researchers and the results would be consistent is known as *dependability* (Gunawan, 2015: 10). This necessitates the assessment and examination of the research process and data analysis by a third party to guarantee that the findings are consistent and repeatable. In the current study, the critical views of the supervisors helped to improve the research dependability and associated with internal validity.

The researcher performed a pilot study with five participants to evaluate the effectiveness of the interview questions in collecting the required data. The interviews were conducted without being biased and in consistent manner. The pilot study enabled the researcher to determine whether the time allocated was adequate and whether the instruments consistently produced similar results. In order to improve

validity, the researcher carefully conceptualised the constructs of the study and designed interview questions that were validated by the supervisor.

2.10 ETHICAL CONSIDERATIONS

Since the current study involved human participants, an application for ethical research approval to conduct the research was obtained from the College of Law's Ethics Research Committee at the University of South Africa, before commencing with data collection. The Ethics Research Committee approval (see Appendix A) aimed to ensure that the rights of participants are protected from any potential negative repercussion that might arise from participating in the study. The researcher considered the following ethical issues; voluntary participation and informed consent, avoiding plagiarism, ensuring the honesty reporting of results and confidentiality and anonymity of the participants (Welman et al, 2010: 181).

2.10.1 Voluntary participation and informed consent

The researcher ensured that no participant was coerced into participating in the current study. All sampled participants who took part in the data collection process were involved willingly after voluntarily giving consent. The researcher explained to the participants the purpose, procedures and risks involved in the study. The researcher then distributed informed consent forms and a hardcopy of all interview questions to those who had agreed to be interviewed. Where the participants did not clearly understand any question, the researcher verbally clarified any such queries. Participants were given an opportunity to decide on whether to either participate or decline to participate in the study, and where they did not understand, they were given an opportunity to ask for clarification from the researcher (Leedy & Ormord, 2016: 101). Participants could withdraw from participating in the study at any time, and that information received up to that point would not be used in the study.

2.10.2 Avoid plagiarism

In line with the University of South Africa's plagiarism policy, all information obtained from different literature sources such as articles, previous studies and textbooks were

fully referenced to acknowledge these sources. There was no attempt by the researcher to get credit from information produced by other researchers.

2.10.3 Honest reporting

When the research findings were discussed and the final research report compiled, professional integrity was maintained. There was no intention or attempt to report the results in a manner intended to reach a particular conclusion. The results were acquired directly from the data collected and reported without any manipulation to obtain a particular outcome.

2.10.4 Confidentiality and anonymity

The identities of the study participants and their institutional affiliations were not disclosed in the study (Welman et al, 2010: 181; Leedy & Ormord, 2016: 102). Accordingly, the researcher requested permission from the participants to record all interviews and the researcher guaranteed the confidentiality of all participants' identities and their organisational affiliation.

The researcher ensured that the readers of the results could not link the interviewees' responses with individual respondents by using codes. The units of analysis were linked by name with their responses (Leedy & Ormord, 2016: 102). For data analysis the participants were coded from R1 to R25 according to the sequence of the face-to-face interviews. Security managers were randomly allocated the following codes: R3, R7, R8, and R15; security officers: R1, R4, R5, R6, R12, R13, R14, R17, R19, and R23; museum specialists: R2, R9, R10, R11, R16, R18, R20, R21, R22, R24, and R25. In summary, the interviewees were distributed as four (4) security managers, ten (10) security officers, and 11 museum experts/specialists.

The data collected from interviews was privately and safely kept in a password protected folder on an external hard drive. The recordings from the interviews were also saved in a folder and stored on an external hard drive. All field notes and completed checklists were safely stored in a locked cabinet accessible to the

researcher only. The research data will be safely kept for 10 years before safely shredding or destroying the records.

2.11 PROBLEMS EXPERIENCED DURING THE RESEARCH

The research process was not without challenges, encountered by the researcher, including cancelled appointments, participant withdrawals, difficulties in interview languages and interview transcriptions.

2.11.1 Availability of participants

The researcher experienced numerous problems associated with setting appointments for interviews with museum managers, curators and security managers owing to their tight work schedules. This resulted in the rescheduling of interview appointments and in some cases, failure to conduct the interviews due to the total cancellations of the agreed appointments and the withdrawals of participants. In some cases, there were constant interruptions during the interviews because the interviewees had to respond to work related issues. The interruptions occurred even though interviews were held outside normal working hours. The researcher had to be patient and tolerant to these unexpected disturbances to ensure successful completing of the interviews. Flexibility and rebooking appointments assisted in accommodating some of the cancelled interview appointments.

2.11.2 Language barriers

During the interviews there were instances when some security officers would switch to their home languages (Tsonga, Venda, Xhosa and Zulu) when they were uncomfortable responding in English continuously. The researcher had to accommodate them and hired a translator to ensure effective transcription of the data after the interviews. The researcher had to explain the questions in the participants' home languages to promote better understanding of questions which resulted in improved responses.

2.11.3 Transcription problems

Three participants did not want to be recorded during their interviews. The researcher had to capture the interview directly from the responses of the interviewees by means of field notes. The unrecorded interviews could not be reviewed to grasp what was communicated by the participants. The use of the mother tongue delayed the transcription process because it was not easy to find experts knowledgeable in the different languages used in the interviews.

2.12 CONCLUSION

This chapter provided a detailed discussion of the strategy adopted to collect the data required to answer the research questions for the study by means of a mixed methods approach. The research process defined the research approach, research design, data collection procedures, sampling techniques used, and the methods adopted to analyse the collected data. The strategy deployed to collect the research data had obstacles. The use of the pilot study assisted the researcher in improving the interview questions to ensure that valid data was collected from the participants. The next chapter focuses on the literature review, which provides a critical discussion of the relevant theoretical framework to justify and position the current study.

CHAPTER 3
LITERATURE REVIEW

3.1 INTRODUCTION

This chapter provides a critical discussion of the relevant theoretical framework to justify and position the current study. This includes a comparative discussion of the Security Risk Management Model (Applied security risk management, 2015: 10). The model is of a cyclic, logical and holistic nature. Every component of the model interacts with all the other components. Thus, one component of the model is dependent on the other components. A change in one component may equally cause changes in the other components. The model or process starts with the existing crime or security risk. The risk must be so severe as to warrant the financial expenditure entailed in providing security (protection) to the concerned organisation. The benefits of a security service must exceed its financial expenditure. The model then provides for a mandate to be obtained from top management to conduct various security risk management functions. This mandate may be contained in the organisations' policies and procedures. It may also be obtained via a service level agreement (SLA) between the security function (security service provider) and the top management of the concerned organisation and the security service provider and also be in writing or verbally agreed to. Moreover, the security service provider must meet with top management's member/s before undertaking any risk management functions. If necessary, do a security risk analysis exercise to identify, measure and prioritise security risks. A security survey exercise to identify security weaknesses and express them numerically in terms of the risk factors can also be undertaken, if needed. Later, solutions or security risk control measures of security risks and security weaknesses are identified. The identified security risk control measures must then be subjected to severe financial scrutiny. This helps in anticipating the financial benefits that the proposed security risk control measures will generate. After scrutinising the security risk control measures, the organisation must submit a dedicated security risk management report of its findings and recommendations to top management, for their scrutiny; and possible approval of the recommendations contained in the report. The approved security risk control measures are then implemented, if necessary, with the

aid of a project management plan. Once the security measures are implemented, they must be evaluated from an operational (practical) viewpoint to determine their effectiveness in offering the required degree of protection as regards the risk. The implemented security measures must then be maintained (serviced) to ensure that they remain operationally functional (working). A final brief report is then submitted to top management. The total risk management exercise is then repeated as and when required. Crime Prevention through Environmental Design (Cebekhulu, 2016: 78), to assist in identifying gaps and building the themes for the current study.

3.2 THEORETICAL FRAMEWORK

3.2.1 Security Risk Management Model (SRMM)

Rogers (2011:10) states that security managers have a duty to reduce crime by ensuring that right security measures are installed at the right places to mitigate risk. It is therefore imperative that every museum employ a security manager in order to mitigate security risks facing the institution. Rogers (2011: 11,14) also indicates that when security measures are properly designed and implemented, they should be able to reduce security weakness factors thereby reducing vulnerability or exposure to crime risks to acceptable levels.

Building on the work of other practitioners Rogers (2005) developed a nine step Security Risk Management Model by customising a basic risk management model to the physical security environment. Rogers asserts that the Security Risk Management Model is important since it provides a structure that facilitates crime reduction measures to achieve a relatively crime free (secure) environment (Rogers, 2011: 15). This model was adapted by Olckers (2007) and Kole (2010) with the incorporation of two additional steps, namely: maintenance and upgrade, and service level agreements (Lombaard, 2014: 34)
 The model remains the basic foundation of security model development that can be adapted and revised according to operational and practical needs of any organisation or site that needs protection (Roger, 2010: 14). Below is Kole's Security Risk Management Model for the protection of petrol stations that can be customised and

implemented to securitise museum facilities for the reduction of crime in the museum environment in South Africa (Kole, 2010: 20).

Figure 1: Kole's Security Risk Management Model
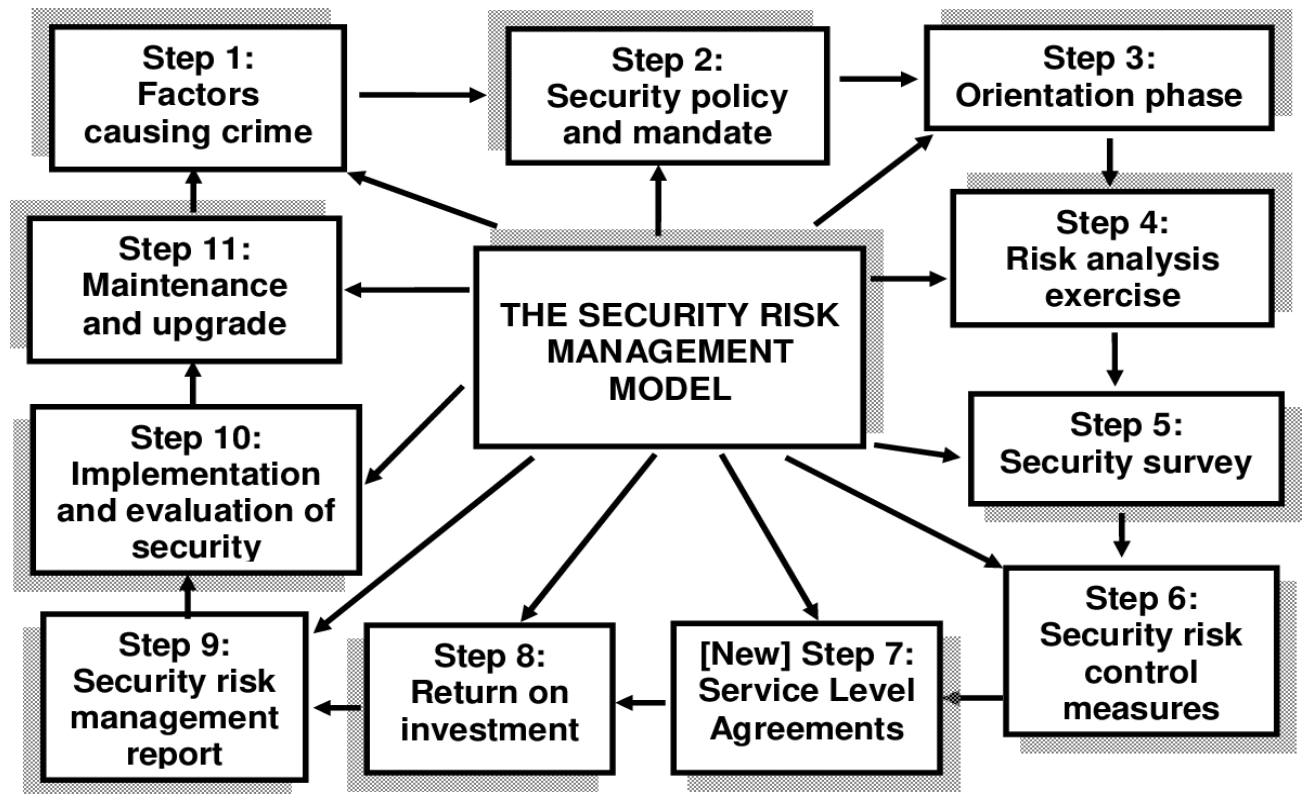
(Source: Kole, 2010: 20)

Step 1: Factors Causing Crime

The following three factors must be present before a crime is committed namely, predisposing factors, precipitating factors and the ability to commit crime. Predisposing factors refers to the desire or motivation for an individual to commit crime. Precipitating factors are the opportunities that exists for an individual to commit a crime and the ability refers to physical ability and intelligence of criminal to commit a crime. Graphically represented it is referred as the 'Triangle of Crime Causation' (Kole, 2010: 15). Schoeman (2011: 25) also highlighted that criminal conduct emanates from the desire by a criminal to commit an offence when an opportunity to commit the crime is identified. Further, to commit a crime successfully, a criminal must

have the ability to do so. Crime causal factors can be viewed as both internal and external depending on the circumstances of the crime being committed.

Benson and Roodt (2015) state that unemployment, poverty and rising costs of living cause criminals to target items of historical and cultural significance purely for their perceived monetary value. This will result in the frequent destruction of priceless artefacts that are part of the celebrated identities of museums. According to Massie (2012), the quest for financial gains is the primary driving force for most museum incidents. Benson and Roodt (2015) further suggest that several factors sustain the illicit trafficking of cultural objects of art. Artefacts and cultural object criminals usually demand for rare and fragile art collections that fetch high prices when sold. The valuable museum items stolen from museums include jewellery, stoneware, war medals, paintings and prints that are sold at private or public auctions conducted locally or internationally.

Tijhuis (2009: 46) identifies art napping, internal thefts, common theft and organised crime as different motives for crime. He posits that there is limited verifiable evidence from which conclusive results about reasons for museum crimes can be extrapolated. To date, limited research efforts have focused on this increasing problem. Most of the stakeholders tend to treat art crimes as a reactionary criminal problem, instead of a proactive preventable situation. This is largely due to the fact that much of the public's knowledge of art crimes comes from high profile cases reported in newspapers, magazines and sensationalised movie plots (Willy, 2014: 1). Grove and Thomas (2014: 20) agree that there should be further research to provide data for a better understanding of the crime phenomenon and the modus operandi of the criminals.

Step 2: Security Policy and Mandate

Schoeman (2011: 37) describes a security policy as a key component of the crime risk management process that provides permission and direction for the effective management of crime risks. One of the ways to evaluate the commitment of executive management is to identify their actions towards establishing or facilitating the development of a security policy that gives direction to risk management. This view by Schoeman (2011: 37) corroborates the suggestion made by Arts Council England

(2013:1) that all museums should have a written security policy that has been signed off by senior management. The policy, that addresses organisation wide security issues, should include access and egress control, possession and storage of all keys, proper storage of collections, protection of museum assets, staff and visitors. A well-formulated security policy will provide informed guidance on the adoption of appropriate measures to effectively mitigate museum risks. An effective security policy for cultural institutions, includes prevention and protection plans and plans for dealing with emergencies and disasters (Tomaštik, 2018: 3).

Step 3: Orientation Phase

The initial meeting held by the client and the in-house security manager or external security consultant commences the security risk management process. The phase must be held on-site as a pro-active and preventive decision made by the security team. On-site orientation marks the sequential start of the security risk management process (Schoeman, 2011: 66). At this phase the security consultant must be familiarised with the building and, core business activities, as well as the existing security measures in the building. The security practitioner makes deliberate decisions to have a general understanding of the entire business environment (Schoeman, 2011: 66).

Step 4: Risk Analysis

Risk analysis is a process that involves the identification of risks before implementing effective measures to mitigate the risks. Schoeman (2011: 93) suggests that risk analysis is aimed at achieving objectives such as: (a) to identify the vulnerable assets; (b) to identify security risks; (c) to compute risk probability (likelihood of loss); (d) to compute risk factors (the probability multiplied by the impact); (e) to prioritise risk factors (according to low, medium or high); and lastly to report the risk to the client so that suitable risk measures can be implemented.

The risk to any collection item is the result of a combination of several factors that can vary significantly from item to item. The mitigation measures appropriate for reducing risk for any collection item should also correspond to these factors. The primary factor used to assign the appropriate risk category should be the perceived and/or actual

value (or significance) of a collections item. Value, and the impact of loss or damage, can be defined in one of several ways including, but not limited to: (a) intrinsic value, (b) cultural value, (c) research value, (d) reputation of the institution, (e) mission of the institution, (f) use and required access (The American Alliance of Museums, 2013: 7).

Step 5: Security Survey

The security consultant familiarises themselves with the building, key activities taking place in the building, current security measures and also drafts a physical security measures checklist during the orientation stage. The checklist audit document should identify security measures such as doors, windows, security lighting, key control, CCTV system, alarm system and security procedures (Kole, 2010: 36). The security survey process applies a checklist to evaluate the current security measures that are operational in order to make an informed decision on how to improve the security system. Decisions to initiate or upgrade a security system must be underlined by an assessment of current and the recommended projected needs.

Liu, Tan and Lok (2012: 601) agree that the security manager is expected to conduct a risk assessment and security survey exercise before making recommendations to management. Decisions to initiate or upgrade a security system must be underlined by an assessment of current security measures and the recommended projected needs. The security manager should make a systematic study of the facility and its operations.

Step 6: Security Risk Control Measures

Rogers (2005: x) describe security risk control measures as the systems installed to deter potential and identified risks. Such control measures may be in the following forms: security policy, security procedures, technical security, human security and security aids (Kole, 2010: 36). The only way to detect, prevent or reduce security risk is by implementing appropriate control measures. Ambrose and Paine (2012: 317) reflect that museum directors have a special responsibility to ensure that museum buildings are secured, and that effective physical defences, security systems and procedures are in place around the clock. Different types of buildings should have different levels of security depending on the value of collections or artefacts. Pandya

(2013: 8) reports that museum art collections are exposed to serious external threats due to the absence of security measures and a lack of human resources. He argues that theft is the most serious threat for museum art collections. Pandya (2013: 9) further explains that many techniques are available for museum security therefore museums, should implement an integrated system that applies modern multiple technologies to prevent risks.

Step 7: Service level agreements (SLAs)

"A Service Level Agreement (SLA) is a formal binding agreement between a services provider and a customer of the service in the context of a particular service provision. An SLA also cites the disciplinary measures and penalties that can be applied in the case of a violation" (Asghar, 2020: 3). Museums enter into a service level agreement with a security service for variety of services to be rendered such alarm response, physical security guarding and maintenance of security systems. SLAs must include penalties that will be invoked when service provider fails to perform their tasks as per agreed SLA (Kole, 2010: 20-21). For example, if the security service provider failed to respond to an alarm within the stipulated time, museum security manager must penalize them according to the agreed SLA.

Step 8: Return on Investment

During this phase, the security consultant must take into consideration the costs associated with different security measures, to determine whether the measures are cost effective. The security measures should enable the client to save money instead of incurring losses (Kole, 2010: 36). This therefore implies that a thorough cost benefit analysis should be conducted to establish whether the cost of the security system would be worth the value that will be derived from such a system. Integrated museum security systems are a costly investment that should be able to yield the expected safety return.

Step 9: Security Risk Management Report

The completion of steps 1 – 7 should signal the security consultant to prepare a comprehensive security risk management report and submit to the executive management of the client. The report contains the security findings and recommendations on how to address the identified risks. A clear and logical budget for the security measures is prepared and the potential savings are determined. If executive management are convinced with the suitability of the recommendations, the proposal will be accepted and approved, awaiting implementation. The implementation process requires effective leadership that provides the other relevant implementation drivers (Rogers, 2009: 58).

Step 10: Implementation and Evaluation of Security

After executive management approves the project for implementation, the security consultant or practitioner may be assigned to oversee the implementation process (Kole, 2010: 37). The effectiveness of the installed security control measures is evaluated after a specific period of operation. A penetration exercise is conducted on the systems to identify any possible gaps in or shortcomings of the measures. A sound evaluation system will provide the required feedback on the success of the implementation, as well as the effectiveness of the systems (Rogers, 2009: 58).

Step 11: Maintenance and Upgrade

Olckers (2007: 103) suggests that security measures must be maintained to achieve sustainable operation capability, ultimately the life cycles of the systems. Therefore, there should be regular maintenance of security systems to ensure effective risk mitigation. The process of maintenance requires the appointment of a qualified and certified personnel that must perform regular maintenance according to a scheduled calendar.

"Many only installed or upgraded their security systems after they had been burgled. Furthermore, very few had a proper risk assessment done on their security systems

on their premises to check whether the systems in place were sufficient to meet their risk profiles" (Applied security risk management, 2015: 10).

3.2.2 Crime Prevention through Environmental Design (CPTED)

According to Hardyns and Pauwels (2017: 124), the CPTED is a theory related to crime prevention that is based on Oscar Newman's (1972) premises that the design of the surroundings, such as the height of a building and its orientation, is closely tied to crime rates in metropolitan area. He noticed that high-rise buildings had higher crime rates than low ones, implying that a sense of ownership aids in the creation of safer, more defensible areas. In 1990, Jeffrey modified the CPTED by suggesting that any crime prevention strategy must consider the brain as well as the physical surroundings (Hardyns & Pauwels, 2017: 135). The use of design and CPTED ideas goes back a long way and CPTED-style security measures can be traced to early human settlements. These include the establishment of iron-age forts and castles that used landscaping, walls, moats, and drawbridges to control access (Cozen & Love, 2015: 1). It is the responsibility of facility owners to ensure that the establishment is well secured and appoint a security manager to lead the security function of the organisation (Cebekhulu, 2016: 78). The security systems for sites usually begin during the programming period of the building construction. Cebekhulu (2016: 80) also explains that the risk assessment and security survey must be considered at the initial stages of the building planning. In CPTED it is important to look at the layout of the facility (museums) and factors around it that will impact security, for example, hills, rivers, natural forests, fences and roads. These factors can be manipulated to suit the business environment, for example, cutting back the natural forest to the required level to enable clear vision if an intruder approaches the facility from the rear (Kole, 2010: 44).

CPTED emphasises the introduction of experts, such as security specialists, engineers and architect, as part of the project team in the construction of new infrastructure, in order to promote significant crime prevention. It is, therefore, imperative that proper security risk assessments of threats should be done and that appropriate security measures are not neglected when planning the construction of

new museums, although many museums in South Africa occupy very old premises, some dated as far back as 1682 (Cebekhulu, 2016: 79; Ambrose & Paine, 2012:6). The construction of museums should be done after careful consideration of safety and measures to minimise risk exposure. Pandya (2013: 9) agrees that the complexity of museum security requires that the issue must be focused on right from the planning stage of the premises and onwards. A security system could not be restricted to protection against vandalism and theft but must also provide visitors' security from attacks by criminals, natural disasters and fire.

3.3 THE POSSIBLE RISKS FACING MUSEUMS

3.3.1 Fire and floods

Fire is one of the threats posed to museum premises and museum collections. The destructive effect of fire can destroy a museum collection in a matter of minutes (Tomaštik et al, 2018: 1). The historic Fort Beaufort Museum, which houses military and domestic artefacts reflecting South African life in the 1820s, was gutted by a raging fire in the early hours of the morning on 10 March 2021. All artefacts in the museum were destroyed by the fire (Piliso, 2021: np). Chinatown's Museum of Chinese in America suffered a terrible blow, while the main museum remains intact and operating normally. The institution's archives at 70 Mulberry Street, New York, were almost completely lost in an unexpected fire that tore through their collection of over 85,000 items (Observer, 2020: np). The significance of the lost archive cannot be overstated. A stolen or damaged artefact might be recovered and restored after damage suffered, while burnt objects and those exposed to heat and smoke could be irreplaceably damaged and lost forever.

The raging wildfire in Cape Town in 2021 (known as the 2021 Table Mountain fire) destroyed part of the University of Cape Town. Priceless artefacts related to African history, including 19th-century watercolours painted by Indigenous peoples, maps, manuscripts and government records were damaged by the fire (Mcgreevy, 2021: np). On 2 September 2018, fire gutted the Museum National that housed various artefacts in Rio de Janeiro, Brazil. In less than two years fire gutted the same museum, leaving researchers concerned about the safety of museums in that country (Mega, 2020: np).

On Wednesday 25 August 2021 the Fort Amiel museum in New Castle was reduced to ashes by the wildfire, destroying all the artefacts therein. The nearby communities were devastated at the sight of the destroyed museum (Nair, 2021: np).

According to the Arts Council England (2013: 2), "fire is perhaps the greatest threat to museum collections, since it can easily destroy or damage a whole collection or even the entire building". Effective fire protection includes prevention, detection, and suppression of fire to prevent ignition and fire spread. Implementation of museum fire prevention and protection policies and plans, fire-safe practices and design, and the installation of automatic museum fire protection systems and portable fire extinguishers are critical to life safety and the protection of collections and structures housing collections (NPS, 2019: 9:1).

The Arts Council England (2013: 2) further suggests that, after fire, water damage is probably the second most common type of damage to museum collections. Water damage can be caused by flash floods and storms but can also be a result of internal structural faults such as leaking pipes and roofs. According to Arnoldi (2021: np), the Johannesburg Geological Museum flood-damaging the geology public display area and the basement storeroom, which houses most of the collection, and caused considerable moisture. A storm caused the worst flooding in Venice in over 50 years in 2019 and left-over 80 percent of the Italian city underwater. Venetian museums were not spared by this as many museums were waterlogged. Museums were temporary closed as the authorities' battles to restore normality in the city. No damages have been caused by the flood to the museum artefacts (Selvin, 2019: np). Museums in England face closure for a period of approximately a year due to flooding. Artefacts were moved from the attractions to a place of safety. Museums are now working on better contingency plans (Knott, 2016: np).

3.3.2 Theft and vandalism

Theft is described as an offence whereby art works are stolen and only discovered after the act was committed. South African National Park Museum reported the theft of gold artefacts which is suspected to have been stolen in December 2016. The following artefacts that were reported stolen were: a necklace, bracelets and beads

excavated from two graves at the Thulamela archaeological site in Kruger National Park (Chambers, 2017). Salomon, Roelfs, Schroeder, Morrin and Begley (2018: np) reveal art museums in the United States had reported incidences of theft and vandalism. Compagna (2015: 91) confirms that if an art collection or object goes missing from the place where it is stored or exhibited, theft is a major possibility to have taken place. Pandya (2013: 9) observes that theft incidents in South African museums exposed the shortcomings of museum security systems. There has been an upward trajectory in the number of thefts in museums. According to Arnoldi (2021), the Johannesburg Geological Museum suffered a break-in and theft of taps from an upper restroom in the museum's west wing that resulted in flooding. Korsell et al (2006: 80) also report that most collections that are easy to steal and sell are items of lower value. Small items such beads were tucked into bags by visitors (Tarmy, 2018: np). Museum exhibitions are the common places where thefts occur during the day. A man walked into a Canadian art exhibition, took an art piece called Banksy print valued at approximately $40,000 and walked away. No one noticed him taking this expensive art because of poor state of security in many art exhibitions. Kuhar (2018: 207) agrees that most art thefts in museums and galleries occurred during the day while the visitors are walking around. This happened because of the lack of protection around the artefacts.

The Red Location Museum situated in New Brighton in Port Elizabeth has since closed its doors to visitors due to vandals. The criminals stole almost everything including door frames, roof and windowpanes (Sizani, 2019: np). The police in Berlin have been investigating the losses of at least 63 artefact pieces, held in three central Berlin Museum. After evaluating for hours video on footage from surveillance cameras, the police said they still had no clear leads in the inquiry (Eddy, 2020: np). Salomon et al (2018: np) confirm that art vandalism is a serious museum risk in United States (US) museums or galleries. It is therefore imperative for museum security executives to provide adequate security systems to safeguard museums artefacts and collections. Benny (2013: 22) indicates that museum archives face threats such as intentional destruction of valuable documents, vandalism, theft, burglary and arson. According Steinhauer (2017: np), vandalism was captured on surveillance camera in horrific footage, ultimately causing $5000.00 in damage to the works and $1500.00 in damage

to the facilities in fewer than two minutes, but the vandals were never caught. Disgruntled employees can also pose threats to a museum in or by colluding with criminals to vandalise and commit crime to get back at the organisation. Demberger (2019: np) concurs that theft and fire are not the only threats facing museums around the world today. A burglary at the Museum Africa in Newtown, Johannesburg, led to flooding and damage to exhibits, (including the hip hop music exhibits), after water pipes were broken (Pijoos, 2020: np).

3.3.3 Robbery

Robbery is a criminal offence in which violence is perpetrated against museum staff or people in a bid to gain possession of art works or collections or forcefully take their personal possessions. If a person committing robbery is disturbed or someone tries to intervene to stop him, in some instances the criminal reacts with violence to retain possession of the objects or can cause harm to the victims (Compagna, 2015: 92). All security countermeasures that are implemented must aim to minimise the criminal's approach to threats with the possibility of unleashing violence and endangering the lives of people. Both employees and visitors must avoid all possible actions that can mistakenly be interpreted by the robber as a threat. Attempted robbery was reported at Museum Africa in Johannesburg. Criminals tried to access the museum through the roof and in the process, they damaged the water pipe which results in the museum flooding (Bhengu, 2020: np).

The theft of objects from Makhanda's Observatory Museum led to a housebreaking and theft case being filed. When the criminals left, they had robbed the institution and disabled the museum's intruder alarms (Maclennan, 2021: np). In another incident, the South African Police Services confirmed the arrest of a cleaner at the Outeniqua Transport Museum in George, Western Cape. The investigation evidence linked the suspected cleaner to the theft of copper cables from the museum (Charles, 2021: np). In a series of museum and auction house raids, fourteen men belonging to an organised crime group were found guilty of plotting to steal rhino horn and Chinese relics worth up to £57 million (Walker, 2016: np). An Israeli local community was

horrified by the robbery at the Archaeology and Art Museum, allegedly involving the theft of 33 artefacts, suspected to be an inside job (The Times of Israel, 2020).

3.3.4. Terrorism

According to Atkinson, Yates and Brooke (2020: 109), terrorism is a severe risk faced by museums in the United States of America (US), Europe and Africa. In 2009, an anti-Semitic white supremacist named James Wenneker von Brunn carried out a weapons attack at the US Holocaust Memorial Museum in Washington, D.C, killing a security guard (White, 2017: 35). Mehdi Nemmouche, a French national of Algerian ancestry who had returned to Europe after serving with the Islamic State in Syria, carried out an attack on the Jewish Museum in Brussels in 2014, murdering four people (Vidino, 2014: 209). According to Nance (2016: 111), in 2015, Islamic terrorists killed 21 people in a deadly attack at the Bardo National Museum in Tunis, Tunisia's capital city.

Following the 2017 Louvre incident, media sources claimed that numerous United Kingdom (UK) museums have undertaken actions to strengthen counter-terrorism security measures after consulting with agencies such as the police. A middle-aged man of Egyptian origin was shot and injured by the French soldiers. This occurred after a man wielded a machete towards the soldiers with an attempt to stab one of them who were guarding the entrance of Louvre Museum (Chrisafis, 2017: np). Atkinson et al (2020: 111) suggest that terrorists target museums because of their iconic status and host large numbers of visitors. The violent terrorist attacks are targeted at museums with large crowds to inflict mass-casualty to make international news headlines.

3.3.5 Resource constraints

The decision about security measures could be impeded by the availability of human, material, informational and financial resources. Safa, Von Solms and Furnell (2016: 60) reiterate that lack of security awareness is a critical cause of infrastructure security failure in organisations. The authors further revealed that understanding, familiarity, and the capacity and aptitude of employees to manage incidents are all aided by

security experience derived from availability of information. The threat of artefacts and art collections in Czeckoslovakia museums had a small prevention budget that threatened the major crime of burglaries. The criminal risk was the highest risk that threatened the cultural heritage in the museums (Tomaštík et al, 2018: 2). Damala, Ruthven and Hornecker (2019: 1) highlight the debate about the benefits and drawbacks of incorporating digital technology into museum settings, especially when it comes to the risks and investments in terms of time, human, and financial resources (Leese, 2015: 104). Without security screening employees who could be blamed for poor performance, security technology such as cybersecurity, biometric security and screening security alone would not be able to accomplish effective performance (Almazroui, Wang & Zhang, 2015: 17).

3.3.6 Opportunistic threats

Nyashanu, Simbanegavi and Gibson's (2020: 1445) study findings revealed that organised criminal gangs, mushrooming liquor bars, illegal dumping, and overcrowding characterise the communities. These socio-economic vices create an environment that nurtures criminals that threaten museum security. Informal settlements are faced with high unemployment, financial woes and high levels of depression, which could trigger other social problems linked to mental health and crime. Museums located close to the informal settlement are vulnerable to security breaches from opportunistic community criminals.

3.4 RISK ASSESSMENT

The risk assessment process encompasses an examination and understanding of several risks that emanate from three key factors, namely, dangers, exposure factors and vulnerability (Compagna, 2015: 15). Dangers refer to potential sources of negative events that may cause damage to property or people; exposure factors, relate to the frequency with which risk events may occur; and vulnerability is described as the susceptibility of art- works to be subject to damage resulting from the occurrence of risks, both arising from intrinsic features and the conditions of security measures in place (Liu, Tan & Lok, 2012: 602). Museum security management should perform a risk analysis by closely considering the three factors outlined above in order

to develop effective risk mitigating systems. The objective of the risk analysis is to predict the severity of the damage that the artwork may suffer. Risk can be formulated as the Probability of Occurrence of a Hazardous Incident x Impact of the Hazard. The risk analysis decision is made based on this prediction and accordingly protection strategies are developed. While developing these strategies, feasibility and costs should also be taken into consideration (Kuzucuoglu, 2014: 285).

To illustrate the applicability of the three factors to risks caused by people, the focus is on the likelihood of the occurrence of deliberate criminal behaviour such as attack, theft, robbery and vandalism. The danger is that a person intends to commit a crime to steal or damage the museum's art- work. The exposure factor depends on the type of risk being considered: risks of theft and vandalism are linked to the number of people present at the site (internal and external staff, and visitors) that may be in contact with cultural or museum objects. The prevalence of criminal actions affects the probability of the crime (Srinivas, 2018: 15). Lastly, the assessment of vulnerability considers the features of the artefacts or objects; where small objects are more vulnerable to theft, yet important monuments and buildings are vulnerable to attacks (Compagna, 2015: 16). The risk assessment process must be conducted systematically: the analysis should start from the immediate context (within the buildings) and unfold in concentric circles to areas outside the premises (Sinha, 2019: 2-3).

3.5 RISK COMPENSATION/RISK MEASURES

The security plan for risk compensation is developed after a risk assessment and the implementation by adopting preventive, active protection and passive protection and organisational measures (Compagna, 2015: 15). According to the NPS (2019: 9:1) a museum should have a comprehensive security system that should be inclusive of policies, procedures, personnel, and equipment to safeguard museum collections from losses due to crime, negligence, fire, or other disastrous security situations. The following measures can be used in a museum, security officers for patrolling the museum and conducting access control, electronic security systems such as CCTV and alarms to detect and deter unauthorised persons or intruders from entering the museums, as well as any other physical security measures.

It is further stated that a security system for museum collections comprises of two principal objectives, namely, (a) to safeguard collections and associated records from loss, and (b) to protect the documentation related to objects in the collection, such as accession records, catalogue records, conservation reports, and photographs (NPS, 2019: 9:1).

3.5.1 Preventative measures

High-profile art thefts from museums and even, regrettably, acts of terror have drawn attention to the vulnerability of museum institutions as sites of crime and catastrophe. Balancing visitor enjoyment and accessibility of the exhibits with security can be difficult for many (Grove &Thomas, 2016: 1). Measures in this compensation category are targeted at reducing the frequency of museum and cultural heritage risks and discouraging criminal acts in various incidents at different levels. Some of these measures include the redevelopment of premises; diligent recruitment of security staff; regular intelligence conducted by security agents; and providing gallery surveillance by staff with uniforms for visibility (Compagna, 2015: 16). Devi and Sharma (2019: 4-5) classified fire precaution measures into "passive" protection measures and "active" protection measures. Fire physical barriers are passive protection measures, while active fire protection measures include extinguisher systems and fire detectors. The key elements are employed to reduce opportunities to commit a crime, to decrease the risks of such crimes, and to reduce the proceeds of crime. A combination of different security measures is essential, and should consist of physical and technical protection, internal and external video surveillance, as well as forensic marking. It is also important to raise public awareness of the value of artworks to the community/society (Kuhar, 2018: 204). To mitigate the risk of theft, a museum in Finland replaced a rhino horn on display with a replica and the museum was advised to place the originals to a secure location. This is due to the high demand for rhino horns used in non-evidence based traditional Asian medicine (Grove &Thomas, 2016: 5).

3.5.2 Passive protection measures

These are security measures that improve the physical defences and ensure that existing security is reinforced and generally at closed points of access. Tomaštik et al (2018: 4) relates passive protection measures to construction measures that include construction building materials, interiors and roofing materials. These measures include facilities like burglar-proofing, gates and fences around the museum or historical sites; external defences of the buildings; access control to individual rooms; safety locks; and protection of individual artwork (Compagna, 2015: 16). These physical security measures are the first line of defence that separate the facility assets from visitors or potential threats (Ncube, 2017: 47). A well-designed and well-maintained perimeter fence or wall provides the first line of defence. It can also serve as a warning of approach to the premises, especially if monitored by alarms and CCTV. The presence of bright security lighting, particularly if is triggered by Passive Infrared detectors (PIRs), provides a cost-effective deterrent in defined areas (Arts Council England, 2013: 1). To mitigate risks like theft and vandalism, security management must intervene with passive protection measures that both increase and reinforce the existing physical defences. These measures emerge as countermeasures against criminal actions and delaying or discouraging break-ins. Buildings and perimeters are offer the first line of defence against theft, fire and floods (Arts Council England, 2013: 1).

Security fence/wall

Ncube (2017: 47) highlights that fencing provides security to premises and the items that are subsequently housed in that facility. Reid (2004: 4) opines that there are two types of fences chain link, steel palisade or wrought iron fences. The mere installations of fences do not deter criminals unless equipped with features such as electricity, razor wire and iron spikes. Chain-link fence is constructed from mild steel wire gauges interwoven into a diamond- shaped mesh. The major weakness of this fence is that criminals bypass the fence by tunnelling through the fence (Reid, 2004: 5). Palisade or wrought iron fences are made of tubular steel or aluminium uprights that are welded to horizontal bars. The fence is bolted between masonry posts on 2.4- to - 3.7 metre

centres. Apart from being strong and having a longer life, the fence can be bypassed by criminals who may climb over it (Reid, 2004: 5).

Security fences are usually gated at entry or exit points. According to Olzak (2012: 16), the two main types of gates that may be installed are vehicle gates and personnel gates. For vehicles gates, the designs may include a simple hinged gate, sliding gate or boom gate. The gates can be manually, hydraulically or electrically operated. Personnel gates are usually hinged gates that can be lockable and work in conjunction with access controlled by guards or electronic control access system (Olzak, 2012: 17).

Building materials and designs

Devi and Sharma (2019: 4-5) propose the use of building materials and designs that are fire resistant and able to retard fire expansion. Fire walls, fire breaks walls, fire barriers, fire doors and fire-rated enclosures are included in a passive fire defence. The main logic behind passive fire measures is to utilise construction features to reduce the spread of fire until it is extinguished by active fire defence. Devi and Sharma (2019: 4-5) further outline that the availability of firewalls conceals fire-resistant materials that mitigate rapid fire spread. Fire safety standards normally include enclosed staircases and corridors leading to final escape exists and fire doors over passageways.

Doors and locks

Museum facility entrances must be fitted with appropriate doors, preferably armoured that are made of solid materials. The doors must also be fitted with safety locks that penetrate the frame anchored to the walls with brackets firmly glued into the walls. According to Olzak (2012: 19), locks and keys may include cylinder locksets, mortise locks, dead- bolt lockset, padlock sets and combination lock- sets. The proper locking of premises can provide fundamental physical security to deter unauthorised access. Compagna (2015: 16) recommends that wooden doors should be solid and at least 40mm thick, anchored to a solid frame with sturdy hinges. Glass components of doors

must be fitted with laminated security glass. If doors are fastened to the outside of the walls, they must have additional safeguards in the form of strap hinges. Roman (2014: 5) confirms that there are different types of doors such as double doors, roll-up doors, solid doors, revolving doors, metal doors, fire- resistant doors and glass doors.

Wide-angle peepholes with a field of view approaching 180 degrees in manned facilities must be used on external doors used by employees. This feature allows security staff to identify suspicious people approaching the buildings and prepare a decisive response. Lastly, a peephole device should be complemented by security chains and locks with a security guard and make possible once the situation has been checked (Compagna, 2015: 16).

Facility windows

The effectiveness of windows as a security feature depends on two main factors, namely, the window frame and the glass. Museum security must utilise crime preventing glazing which is resistant to direct attack by blunt and bladed implements. The glazing may be vulnerable to the effect of explosions caused by criminals to forcefully access the museum to steal artefacts or cultural collections. Compagna (2015: 83) suggests that the risk of damage to artefacts caused by glass fragments is minimised by anti-glass: depending on the type of glass and how the glass is securely fitted to the frame. Laminated security glass prevents or slows down access by burglars and produce noise that may alert the security personnel.

It is therefore important for security management to test laminated glass by running tests such as normal safety, vandalism resistance, burglary resistance, and bullet resistance. Compagna (2015: 63) confirms that museum security fittings and installations and the value of the artefacts contained in a museum are the basis for deciding which type of glass to use for entrances and the protection of art works on display. Ghazi (2015: 3) argues that older facilities often have designs that do not ensure security, like shatter- proof glass or tamper proof doors and windows. Olzak (2012: 15) posits that most modern buildings do not have windows that intruders have the option to break the windows. Windows and roof lights can often present major

security problems in museums. Sometimes even very high windows can be reached from adjacent roofs or ledges, fire escape stairs or scaffolding (Arts Council England, 2013: 5). Recommendations for windows include: (a) glass bricks set in steel or concrete frames, (b) locked or sealed sashes, including a thermal break to avoid condensation, with panes no more than 23cm x 15cm, (c) narrow openings of no more than 15cm and (d) attack-resistant security glazing (Arts Council England, 2013: 4).

Fire extinguishers, fire detectors and fire hydrants

Nagaj and Žuromskaitė (2020:10) suggest the significance of having fire extinguishers in the premises to respond to imminent fire emergencies. The availability of fire control measures could enable saving the museum's facilities, personnel and visitors from a potential fire danger. Museums need to install automatic fire detection system such as sprinklers, which will be activated when the smoke is detected in the museum, especially in storage areas where collections are being stored (NPS, 2019: 9:6). The local municipality fire department should be equipped to deal with a fire emergency that may occurred in the museum (NPS, 2019: 9:14). Museum fire extinguishers, fire detection and fire hydrants must be serviced once per annum (NPS, 2019: 23). Fire extinguisher must be always visible in the museum by placing proper signage next to it. Fire hydrants must not be used for any other function such as washing of floors and cars. It must always be ready for fire emergency with appropriate water pressure. Museum security officers and other employees must be trained on the use of different fire extinguishers. This will help staff members to be able to deal with small fire before it spread all over the museum and causing major destruction of the museum.

3.5.3 Active protection measures

The system is a combination of intrusion-detection, anti-theft, anti-assault, and burglary-protection systems coupled with surveillance (Compagna, 2015: 85). It is a direct integration of technology and people to derive the best for the systems. Tomastik et al (2018: 3) describe active protection measures and technical measures such as alarm distress, CCTV, electronic access control and information as a communication system. Active protection measures are meant to detect risks at the inception stages. The systems comprise of a series of detectors, alarms, a connection

system, a manned control system, and operators for quick response and intervention (Hymanson, 2015: 1; Compagna, 2015: 85). The measures must cover the entire external areas, the building and the individual units. Sensors to detect climbing of the parameter, break-ins, and the presence of intruders in the vicinity between the parameter and the buildings must be well-installed (Hymanson, 2015: 1). Salo (2013: 8) talks about the use of other technological devices such as electronic locks, card readers, biometric credential verification, x-ray machines, metal detectors and intrusion detection devices as part of active protection measures.

Security on the buildings must allow the detection of wall-breakages, window breakages and the presence of intruders in the access area (Centre for the Protection of National Infrastructure (CPNI), 2013: 22). Any such access should be timely detected by the systems and urgently responded, to ameliorate the risk impact. Individual units must also have a tight line of active protection measures to detect possible break-ins through walls and glazing. These measures would therefore minimise or prevent the presence of intruders in the internal vicinities of the premises (Compagna, 2015: 86). To achieve sustainable operation of the anti-intrusion security system there should be a secondary or back-up power supply to ensure continuous effective operation when electricity is cut-off.

3.5.4 Closed Circuit Television (CCTV)

Electronic alarm systems, continuous direct surveillance and Closed-Circuit Television (CCTV) are important deterrent measures that should be installed to protect against museum risks such as vandalism and theft of objects (Hymanson, 2015: 1). Findings from a study by Korsell et al (2006: 12) revealed that thirty percent of museums deploy security personnel or surveillance cameras, while employee surveillance was reported as common. The use of additional security equipment for some objects was confirmed in seventy-five percent of the studied museums. The CCTV security system consists of the following installations: (a) recording equipment (video cameras); (b) a video recording system; (c) image displays (monitors); (d) a data transmission system; and (e) a management system (video matrices for connecting the cameras to the monitors and recording and communication systems) (Compagna, 2015: 65).

The use of CCTV as a security measure was observed in a study by Kole (2010: 37) in the petrol station industry, indicating that the lack of CCTV installations in many petrol stations led to them being targets by criminal syndicates. Fennelly (2004: 341) explains that CCTV cameras that are not being monitored will have an officer performing a reactive role, while those that are continuously monitored are a proactive system. Perkko (2006: 11) further recommends the need to set-up CCTV cameras inside and outside museum premises, as well as emergency routines with regular rehearsals and drills. The effectiveness of CCTV system is enhanced when there are competent officers to continuously monitor the system for 24 hours, seven days a week. Perkko further indicates that CCTV cameras should be installed at critical multiple access points to increase facility surveillance. Technological security measures (e.g., CCTV) are helpful into being used for improving security and safety at petrol stations (Kole, 2010: 39). The findings by Welsh et al (2020: 59) confirm that private security personnel operated CCTV schemes had greater crime prevention impacts than police or a mix of police operated CCTV schemes. Museums in South Africa should also consider the installations of CCTV as part of artefacts safeguarding.

3.5.5 Alarm systems

Alarm systems are an important part of a museum's collections of defences against fire and criminality. Balanced and reliable systems that meet the needs of museums and their collections are only achieved if all relevant parties are involved in the planning process for alarm systems (Arts Council England, 2013: 1). Museum galleries require security systems that are effective and efficient and external areas of buildings should be free from invasive features (Hymanson, 2015: 1). The alarm system should be easy to maintain and address false alarms and faults yet ensuring the flexibility of advancements in technology. The project design of the alarm systems should foster concentric protection during the opening and closing of the galleries as established by Compagna (2015: 65). Alarm systems must be an integral part of the active protection system to achieve effective museum security and safety. Perkko (2006: 9) also advocates for the installations of fire safety alarms and premises security alarms that should be connected to external professionals that can respond promptly when alarms go off. The historic Fort Beaufort Museum was destroyed by

fire on March 10, 2021, early in the morning. Even though the source of the fire is unknown, the Department of Sport, Arts, Culture, and Recreation suspected vandalism or theft (Loubser, 2021: np).

3.5.6 X-ray scanners and metal detectors

According to Liu, Li, Shu and Zhang (2018: 278) the use of an electric or bar scanner helps in detecting illegal items that may be smuggled in or out of a premises or an environment. According to Almazroui, Wang and Zhang (2015: 14), X-ray machines scan two dimensional images, however if the security person has concerns about a visitor's bag, the bag would be individually scrutinised by another officer. The tourist passed through the metal detector, and when the alert was triggered, the person could be subjected to the pat-down screening by a security officer of the same gender (Leese, 2015: 98). If the tourist is suspected of having something dangerous on him/her, he/she is subjected to a second human X-ray scanner to locate the detected object through further examination. Almazroui et al (2015: 15) confirm that when screening bags, the X-ray systems allow the operator to see the images by employing a faux colour approach to distinguish between different material hues. The combination of x-ray scanners and metal detectors layered security system is commonly applied in airport security across the globe. To achieve the highest level of security, comprehensive safety and security programs must be developed.

3.5.7 Organisational measures

These measures are concerned with the effective management of museum or heritage sites and ensuring that the site is operating according to the required safety and security standards. These include examples such as patrol procedures; facility maintenance plan; education and training of security staff; control centre management and protocols; management and control of visitors; control of access by authorised personnel (Hymanson, 2015: 1); and procedures for opening and closing the museum or gallery (Compagna, 2015: 16). These measures encompass all safety and security policies and procedures that are aimed at the overall management of the museum or heritage site. Tomaštik et al (2018: 4) corroborate that those organisational measures

should entail an emergency plan, the organisation of security personnel and surveillance services, rules of safety operation and an evacuation plan.

Museum management should provide proper training and development to security workers to equip them with relevant knowledge and skills for implementing safety and security procedures. Perkko (2006: 14) highlights the importance of appointing a security official to administer training for all museum office employees and security staff on safety and security related issues. The museum employees should be trained to observe and take appropriate actions to safeguard museum assets. Olzak (2012: 27) suggests that security guards can be contracted from professional security companies. If the security staff possess the right expertise, they will be able to effectively respond to normal conditions and emergencies. Nagaj and Žuromskaitė (2020:10) suggests that every museum should hire a suitably qualified security manager to oversee 24-hour security surveillance.

To successfully execute a museum facility plan, all service installations should be operational when an emergency arises. Compagna (2015: 82) recommends that the responsibility for maintenance should be assigned to specialised personnel, (preferably with certification of quality), and the maintenance contract should establish maximum times for contingent maintenance and repairs. A calendar for a maintenance schedule for a period of a year should be in place. The management system must also include a register of all operations executed such as false alarms, interventions for faults and maintenance (Nagaj & Žuromskaitė, 2020: 10).

The process of the management site keys involves: (a) ensuring that the locks and padlocks on all access points are identified and classified; (b) the maintenance of a key register indicating the number of duplicate keys available; and (c) guidelines for employees who are entrusted with security keys and should handle the keys on and off the premises. Another organisational measure is to ensure that there should be a catalogue of inventory of museum artefacts and collections in the galleries. The inventory management should perform periodic stocktaking of all the museum works to facilitate the detection of theft and quickly respond to institute a recovery plan for stolen assets (Compagna, 2015: 82).

Physical access controls clearly define the registration of the movements of authorised personnel (office staff, maintenance staff and visitors). This involves ensuring that such personnel are recorded on arrival and departure from museum buildings (Hymanson, 2015: 1). Visitors' identification badges may be allocated to visiting individuals and electronic access control systems such as swipe cards, biometric systems, or codes may be used by individual employees. Visitors may have to be screened or searched when entering the museum premises and a safe area to deposit their bags may be provided. To ensure that the museum can secure its premises from weapons brought in bags through the entrances, the British Museum has installed new visitor search facilities outside the building (Longmore-Etheridge, 2017: np).

There should be adequate visitor management and control because that is linked to one of the risk factors. When the number of visitors is high, the potential risk of criminal actions increases. Visitor management may also involve checking individuals on arrival at the entrance using security staff or instruments such as metal detectors. Any museum or heritage area undergoing extraordinary or scheduled maintenance must be cordon-off and people who are not part of the maintenance team should not be allowed access to such an area for security reasons (Compagna, 2015: 72).

Protocols for access to the control centre, the opening and closing of the museums and for security patrols should be in place. Compagna (2015: 72) explains that every security system must have a functional control centre that could receive alarm and video signals. The centre receives reports from surveillance workers and should also include an environmental monitoring system for the museum. The centre (also referred to as the control room), houses the control units for the equipment and keeps a set of keys for the entire facility. It should constitute the following: (a) equipment that provides safety to security staff on duty by preventing unauthorised access; (b) highly qualified and experienced staff knowledgeable on security systems; (c) essential materials for handling emergencies of all kinds; (d) uninterruptable power supply for alarm and video surveillance systems; and (e) protected area that allows immediate and rapid alarm response (Compagna, 2015: 72).

Devices to protect museum vandalism involve the design and fitting of facilities such as fitted walls, display units and open shelves. These fixtures and fittings keep the artefacts and other valuable objects from the easy reach of visitors or any unauthorised individuals. Compagna (2015: 16) suggests that direct protection solutions prevent art works from thrown objects, inflammable liquids, acids, spray paint and violent blows. Different forms of protective measures should be instituted to protect museum objects or art works from risks.

3.5.8 Display units

Glass display cases often provide a home for precious, rare or valuable objects of great cultural significance and security is a key feature to consider when choosing a display case. It must be tamper-proof and secure from potential thieves. A high-quality glass display case will also minimise any risk of accidental damage to the glass for superb durability and keep your exhibit looking smart and attractive for years to come (Glasshaus, 2019: np). There are broadly four different kinds of display cases that a curator could choose to safeguard art collections. These types are: (a) Conservation grades cases, (b) ventilated cases (c) standard cases and (d) designer-built cases. Some materials are safe to use in any kind of case. These include metal, preferably baked enamel or steel on aluminium, glass, perspex, neoprene, which is used to seal cases. Others can be used, but only upon consultation from conservators (Museum Galleries Scotland, 2021).

Museum artefacts that hang from walls or displayed on plinths that are not safeguarded by glass due to the nature of their display, can be separated by using barriers with alarms (communicated to the public), together with sensors that warn of any movements. Compagna (2015: 64) establishes that small items must be fastened to supports using screws that would prevent quick removal by visitors or criminals. When hosting exhibitions, museum management should use fitted walls, to place artefacts on or technological instruments to provide a platform for some degree of interaction with visitors. Low value items that can be touched and moved should be attached to strong cables to secure them. Korsell et al (2006: 97) report that less valuable museum objects may be displayed in such a way that they allow visitors to

have contact with them. While objects of higher value should be attached to security devices to protect them from visitors and criminals.

3.5.9 Other crime prevention measures

 Museum security must ensure that the site and buildings are equipped with suitable lighting. Sufficient lighting is a crime prevention measure that discourages criminals from committing crimes. Even when criminal actions occur, lighting makes it possible to observe such actions promptly. External areas that are less often used and are less subject to direct marketing must have adequate lighting. Compagna (2015: 85) establishes that the advent of technology has made it possible to find lighting systems that triggered by photocells or sensors that reveal the presence or transit of intruders. These systems allow targeted use of the lighting, while reducing energy consumption and expense. The provision of proper lighting in and around museum premises was recommended by Perkko (2006: 7) as a passive protective security measure. Museums must keep a balance of being service oriented, accessible to the public and protect its assets including displayed artefacts. Access control measures must be designed in a way that is not going to scare off visitors coming to the museums (Runhoved, 2020: 3).

Security officers posted at museums play a very important role such patrolling and safeguarding of museum assets. In larger museums such national museum security officers are sourced from municipality police or national police and museums do not have control over who is being posted (Pandya, 2013: 11). The visibility of security officers at the museum can act as a deterrent for anyone with criminal intent. In other museums security officers can also be utilised as front-line workers who welcome visitors and escort them from the parking areas to museum entrance (Pandya, 2013: 13).

3.5.10 Insurance policies

Ekosaari, Jantunen and Paakoski (2014: 12) establish that there are three primary elements of a security plan which include risk mapping and risk management, security and emergency plans for people and museum collections, and insurance policies.

Insurance policies provide a guideline on procedures for insuring art works and museum premises. Although insuring museums or artefacts is not a protective security measure, it qualifies as an administrative response to security risks by transferring the risks to insurance companies. In the event of loss of museum collections due to the risk of fire, floods, theft or burglary, the institutions will receive monetary compensation which may be equivalent to the amount the assets were insured for. The security policy should describe how the insurance values of different items (buildings, collections and art objects) are ascertained. Ekosaari et al (2014: 12) further clarify the importance of establishing clear insurance procedures and how to revise them when necessary.

Artefacts are borrowed from one museum to the other. Museum artefacts may be stolen or damaged while in transit from one museum to the other, it is imperative that the museum have insurance in place to cater for any unforeseen circumstance (Gredka-Ligarska, 2015: 169). Museum must take temporary insurance whenever the artefacts is transported to exhibition places or taken to overseas (Gredka-Ligarska, 2015: 170).

3.6 IMPACT OF ARTEFACT THEFT AND VANDALISM

Red Location Museum in East London has been closed due to vandalism of both artefacts and the museum building. The museum was vandalised by residents in protest for housing dispute between residents and the municipality. It will cost the Nelson Mandela Bay municipality approximately R21 million rand to rebuild the museum plus R8 million rand to replace the damaged artefacts. The closure of the museum resulted in loss of revenue due to non-visitation (Sizani, 2019: np). In 2012 Pretoria art museum had to be temporary closed due to theft of artefacts. This affected many artists who conducted regular exhibitions at the museum (Gambrell, 2012: np). On Tuesday 20 October 2020 police reported that approximately 70 artefacts were vandalised in a museum in the city of Berlin in Germany. The artefacts were sprayed with an oily substance. Authorities viewed this as a criminal act. Security needs to be beefed up around the museums and it will cost money which is initially not budgeted (Solomon, 2020: np). Mississippi River Museum in the United States closed down due to vandalism and the incident disrupted dozens of family weekend plans (Butcher,

2019: np). In 2019 Khalil Museum in the city of Cairo was closed after one of its popular collections called Vincent van Gogh's vase flower was stolen (Bailey, 2021: np).

On 20 November 2015, three armed, masked men entered Italy's Castelvecchio Museum in Verona, shortly after it had closed. The bandits tied up and gagged both a cashier and the museum's remaining security guard. The thieves quickly helped themselves to seventeen rare paintings worth approximately 15 million euros and escaped in the security guard's vehicle using the keys stolen from him. The Italian authorities speculated that the theft had been ordered by an unsavoury private collector (Salmon, 2018: 1).

Museums and heritage sites consider museum security to be a fundamental issue for the safety of employees and museum visitors, as well as for the security of art works and collections. Museum security is also linked to other museum activities that include financial planning, the registration and documentation of artworks, facility and installations planning and the training of staff members (Compagna, 2015: 63– 86; Olckers, 2007: 13). If artworks are lost from museums due to theft, security budget of the affected museums may have to be increased to safeguard the remaining museum assets. Improved security systems that are costly may have to be acquired and implemented within tight budget constraints. For instance, insurance policies may be taken to cover valuable objects against theft and destruction due to fire and floods. Additionally, buildings may be insured against damage and vandalism which are costly risks management measures.

The global art market has experienced exponential growth due to considerable increased investment and speculation. The increased demand for art works has led to the illegal trade in artistic and cultural assets. The fundamental rule of the free market applies: the greater the demand for artefacts, the higher the interest of criminals in museum objects (Compagna, 2015: 22). Therefore, artefact crime has been driven by the need to exploit and satisfy the global increase in the demand for artefacts. This results in the loss of highly valuable artistic and cultural assets which can lead to fewer visitors to museums. Without art works of high value in museums, tourists may be disinterested in visiting the museums. The identity or status of museums or heritage

sites is described based on the types of collections, artworks, objects, documentation, or history held by the facility. If museums lose the main assets in their custody, they will be rendered less worthy or relevant for existing (Simmons, 2016: 182). The implication, therefore, is that if museums lose their treasures, they are unlikely to attract tourists interested in specific cultural artefacts.

According to Tétreault (2008: 14), after the occurrence of the fire, soot deposition and water damage considerably add to the total loss of museum artefacts and art collections. The value of affected art collections is depreciated, and that value cannot be restored. In some instances, the damage caused by soot and water cannot be reversible, hence the item's value loss is low. Atkinson et al (2020: 111) point out the cost implications of instituting counter-terrorism measures such as hiring security personnel and digital technology and the cultural consequences of counter-terrorism communication to some communities. Benson (2009: 156) argues that lost museum collections can neither be replaceable nor renewable.

3.7 CONCLUSION

This chapter discussed the museum security theoretical framework that assisted to position the current study. Initially, the Security Risk Management Model by Rogers (2005: v–xi) had nine steps. Step 7 (Service Level Agreements) was adapted by Kole (2010:20) and step 11 (Maintenance) that was adapted by Olckers (2007:103).
The Security Risk Management Model adapted by Kole (2010:10) outlined the following sequential steps: (1) factors causing crime; (2) security policy and mandate; (3) orientation phase; (4) risk analysis exercise; (5) security survey; (6) security risk control measures; (7) service level agreement; (8) return on investment; (9) security risk management report; and (10) implementation and evaluation of security measures and (11) maintenance and upgrade.

Museum risks like theft, robbery and damage to museum premises, artistic and cultural artefacts were identified and explained. Appropriate risk compensation and mitigation measures in response to risk exposure, including passive protective measures, active protective measures and organisational measures were critically

evaluated. Limited knowledge about security risks such as theft and a lack of perpetual security planning, inclusive of risk analysis, may imply that security systems are often ineffective and misdirected.

Lastly, the negative impact of the theft and vandalism of artefacts on museums was also discussed. When arts-works are stolen or destroyed their value cannot be replaced, thus robbing the museums of potential visitors that would have been attracted by such valuable assets. Additionally, the status of museums can also diminish due to the loss of valuable art works and the opportunity to pass on the heritage to future generations is also thwarted.

CHAPTER 4

RESEARCH FINDINGS

4.1 INTRODUCTION

This study aimed to examine the current security measures for the protection of museums in the Gauteng Province, South Africa to develop a security model for these museums. To achieve the research aim, the collected data are presented in this chapter and then analysed, discussed and interpreted in this Chapter 5 to provide answers to the research questions formulated in Chapter 1. The quantitative analysis in Section 4.3 was based on the observed checklist data for the sampled museums, while the thematic analysis of the qualitative data in Section 4.4 was for the interviews conducted.

4.2 RESPONSE RATE

The selected sample for the research study was 25 participants consisting of security officers (10), security managers (4) and museum specialists (11) in the Gauteng Province, South Africa. Observation checklists were used to collect quantitative data from the 25 museums. Twenty-five interviews were successfully conducted with willing participants from 25 different South African museums who took part in the data collection process. Therefore, the overall response rate for the current study was 100%. The qualitative field data was the basis of the thematic data analysis and the subsequent discussions.

4.3 QUANTITATIVE DATA ANALYSIS

The data collected from each museum through observation using checklists are presented in this section. The items checked were mainly based on dichotomous measurement (yes/no) of the museum security plan, policy and procedures, existing safety measures and the nature of security risks that were prevalent in the museums. It was observed during the checking process that the mere fact that a security measure was in place did not automatically imply that the security measure was functional. The

qualitative field data was useful for validating the functionality of the security measures.

4.3.1 Museum security plan, policy and procedures

Using the observation checklist at 25 different museums, the field data observed are depicted in Table 4.1 below to show the statistics about the availability of a security plan, security policy and other related control procedures in the various museums.

Table 1: Museum security plan, policy and control procedures

			Security plan		Security policy		Operational instructions		Entry points access control		Cleaners control procedure		Contractors control procedure		Maintenance procedure	
			F	%	F	%	F	%	F	%	F	%	F	%	F	%
Valid		No	20	80.0	13	52.0	14	56.0	12	48.0	14	56.0	20	80.0	19	76.0
		Yes	5	20.0	12	48.0	11	44.0	13	52.0	11	44.0	5	20.0	6	24.0
		Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0

Key – *Frequency; % - Percent*

The museum security documentation was as follows: *security plan*; no – 20 (80%); yes – 5 (20%), written *security policy;* no – 13 (52%); yes – 12 (48%), and *operational instructions*: no – 14 (56%); yes – 11 (44%). *Entry point access control*: no – 12 (48%); yes – 13 (52%); *cleaners control procedure*: no – 14 (56%); yes – 11 (44%); *contractors control procedure* was: no – 20 (80%); yes – 5 (20%) and *maintenance control procedure*: no – 19 (76%); yes – 6 (24%).

The field data for the first three security documents (security plan, security policy and operational instructions) had a close interrelationship where the lack of a security plan had a link to the lack of a security policy and the limited operational control instructions. Findings from a study by Hina and Dominic (2018: 1) confirm that lack of policy guidelines threatens the security situations in higher educational institutions and leads to risky and irregular employee behaviour. However, there was more entry point access control in most museums. The trend of the lack of control procedures

continued to be linked to the limited security plans and security policies. Safa et al (2016: 60) reiterate that the lack of security awareness, which could be attributed to limited security procedures, is a critical cause of infrastructure security failures in organisations.

4.3.2 Museum security measures

The field data in Table 4.2 were based on museum security measures that include CCTV cameras, alarm systems, visible policing, security fencing, escorting of visitors, fire detection control system and glass-break technology.

Table 2: Museum security measures

		CCTV cameras		Alarm systems		Visible policing		Security fencing		Escorting of visitors		Glass-break technology		Fire control detection systems	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
Valid	No	11	40.0	18	72.0	10	40.0	10	20.0	15	60.0	17	68.0	5	20.0
	Yes	14	60.0	7	28.0	15	60.0	15	80.0	10	40.0	8	32.0	20	80.0
	Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0

Key – *Frequency; % - Percent*

The following was observed: *CCTV cameras*; no – 11 (40%); yes – 14 (60%); fire detection control systems; no – 5 (20%); yes – 20 (80%); *alarm systems;* no – 18 (72%); yes – 7 (28%); *visible policing*; no – 10 (40%); yes – 15 (60%); *security fencing*; no – 10 (40%); yes – 15 (60%); *escorting of visitors*; no – 15 (60%); yes – 10 (40%); and *glass-break technology*; no – 17 (68%); yes – 8 (32%).

The security measures field data indicated that CCTV cameras, visible policing, security fencing and fire detection control systems were implemented in most observed museums. However, alarm systems, escorting of visitors and glass-break technology were lowly implemented in some museums. Security budget allocation was suggested to be a limitation to the implementation of most of the integrated security measures (Safa et al, 2015: 70). The threat of artefacts and art collections in

Czechoslovakian museums had a small prevention budget that threatened their major crime, burglaries. The criminal risk was the highest risk that threatened the cultural heritage in the museums (Tomaštík et al, 2018: 2). Similarly, South African museums do not have enough funds allocated to hire the required number of security officers to assign to patrol duties and for to purchasing alarm systems and glass-break technology (Benny, 2013: xvi).

4.3.3 Museum security measures and vandalism risk

The field data in Table 4.3 below shows museum security measures that include fire extinguishers, electrical and communications stations locked, displayed emergency evacuation plan, facility maintenance plan and vandalism statistics for the past three, five to 12 and 12 and more years documented and provided by the museum security managers. The museum risks were provided as secondary data in the incident records.

Table 3: Museum security measures and vandalism in the last 3, 5-12 & 12 and more years

		Fire extinguishers		Electrical & com. stations locked		Emergency evacuation plan		Facility maintenance plan		Vandalism in last 3 years		Vandalism in last 5-12 years		Vandalism in last 12≥ years	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
Valid	No	1	4.0	7	28.0	16	64.0	19	76.0	20	80.0	22	88.0	24	96.0
	Yes	24	96.0	18	72.0	9	36.0	6	24.0	5	20.0	3	12.0	1	4.0
	Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0

Key: *F – Frequency; % - Percent*

The observation revealed the following: *fire extinguishers*; no – 1 (4%); yes – 24 (96%); *electrical and communication stations locked*; no – 7 (28%); yes – 18 (72%); *emergency evacuation plan*; no – 16 (64%); yes – 9 (36%); and *facility maintenance plan*; no – 19 (76%); yes – 6 (24%). The vandalism statistics obtained from museum records during observations showed: vandalism in past 3 years – 5 (20%); in past 5 – 12 years – 3 (12%); and in past 12≥ years – 1 (4%).

Most of the selected museums had fire extinguishers and electrical and communication stations that were locked, while emergency evacuation plans and facility maintenance plans were not found on display in many of the observed museums. Safa et al (2016: 60) point out that the lack of security awareness is a critical cause of infrastructure security failure in organisations. The museums showed a lack of commitment to security planning that could be attributed to a shortage of the relevant skills and knowledge to formulate the requisite security plans. Liston (2015: np) shares that the emergency preparedness and response plan are dependent on the quality of the museum staff and management. The reality of budget constraints into ensuring the effective recruitment of competent security officers cannot be ignored. The presence of fire security measures could be a result of the high fire risk in museums.

4.3.4 Theft of artefacts as a museum security risks in the last 3, 5-12 and 12 or more years

The field data in Table 4.4 below shows museum security risks provided by security managers that include theft of artefacts and robbing of visitors in the last 3, 5-12 and 12 and more years. The data was provided by security managers during the observation museum tours.

Table 4: Thefts of artefacts and robbing visitors in the past 3, 5-12 & 12 or more years

		Theft of artefacts in last 3 years		Theft of artefacts in last 5-12 years		Theft of artefacts 12≥ years		Robbing of visitors in last 3 years		Robbing of visitors in last 5-12 years		Robbing of visitors 12≥ years	
		F	%	F	%	F	%	F	%	F	%	F	%
Valid	No	21	84.0	22	88.0	25	100.0	22	88.0	23	92.0	24	96.0
	Yes	4	16.0	3	12.0	0	0	3	12.0	2	8.0	1	4.0
	Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0

Key – *Frequency; % - Percent*

The data showed that *theft of artefacts in the past three years* was reported in four museums (16%); the *theft of artefacts in past five-12 years* occurred in three museums (12%) and there was no reported *theft of artefacts for 12≥ years*. The statistics about the robbing of visitors was reported as follows: *in past three years* there were three cases (12%); *in last 5-12 years* there were two cases (8%) and *in past 12≥ years* there was one incident (4%). The field data showed a gradual increase in both-the theft of artefacts and robbing of visitors.

4.3.5 Fire and floods as a museum security risks in the last 3, 5-12 and 12 and more years

The observed field data in Table 4.5 below shows museum security risks that include fire and floods in the past, 5-12 and 12 and more years.

Table 5: Fire and floods in the 3, 5 - 12 & over 12 years

		Fire in last 3 years		Fire in last 5-12 years		Fire in last 12≥ years		Floods in last 3 years		Floods in last 5-12 years		Floods in last 12≥ years	
		F	%	F	%	F	%	F	%	F	%	F	%
Valid	No	21	83.0	25	100.0	25	100.0	22	88.0	25	100.0	25	100.0
	Yes	4	17.0	0	0	0	0	3	12.0	0	0	0	0
	Total	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0

Key: F – Frequency; % - Percent

From the data in Table 4.5 above, it was reported that there were four cases (17%) of *fire in the past three years* and there was no reported risk of *fire in past 5-12 years and in past 12≥ years*. Similarly, three cases of floods were reported *in past three years* and there were no reported *floods in past 5-12 years* and *in past 12≥ years*.

4.4 QUALITATIVE DATA ANALYSIS

The interview results in this section are logically presented according to the formulated sub-research questions that are to answer the main research question as stated below:

Which security measures are currently being implemented to protect museums in South Africa? Face-to-face interviews were conducted with 25 museum participants comprising of security managers, security officers and museums specialists to gain insight into the nature of the security measures in place. Each interviewed participant represented 25 different South African museums in the Gauteng Province, South Africa. The main museum categories were National museums (10); Municipality museums (7); Museums under universities (2); and Museums under Trusts (6) out of the six museums under trusts; three (3) were house museums. The respondents were coded from R1 to R25 according to the sequence of the face-to-face interviews. Security managers were randomly allocated the following codes: R3, R7, R8, and R15; security officers: R1, R4, R5, R6, R12, R13, R14, R17, R19, and R23; museum specialists: R2, R9, R10, R11, R16, R18, R20, R21, R22, R24, and R25. In summary, the interviewees were distributed as four (4) security managers, ten (10) security officers and eleven (11) museum experts/specialists.

RQ1: What are the possible risks that visitors and museum assets are exposed to when visiting museums in Gauteng, South Africa?

4.4.1 Existing Museum risks

The data presented in this section provide quoted statements about possible risks affecting museums and visitors to answer the sub-question: *What are the possible risks that both visitors and museum assets are exposed to when visiting museums in Gauteng, South Africa?* The transcription of data answering Research Question 1 resulted in existing museum risks that include: theft and vandalism, robbery and/or burglary, fire, flooding and other opportunistic threats.

4.4.1.1 Theft and vandalism

Fifteen participants indicated that they had experienced theft and/or vandalism of some sort at the museum where they work. In all the reported cases, twelve participants stated that the theft involved museum assets such as trollies, electrical cables, drain covers, fences, video analytics, and cutlery. The statements below support the claims:

R1: "The person stole one of those trollies we push around."

R5: "The thieves tried to steal electric cables and they started a fire."

R12: "We have experienced general vandalism like stealing of electrical cables, stealing of drain covers, and graffiti on the building."

R11: "Last time we experience (sic) criminal activities; the criminals stole computers. They broke the window and cleaned out this space. They drugged and tied up the guards."

R14: "[There] were other items stolen [which] include car batteries, the fence, video analytic, one energiser at a camera and someone attempted to pull out poles."

R23: "There was theft of palisade fence in the last three years by unknown suspects."

R24: "Another time, they stole some items of cutlery and so on, but they were not looking for antiques. They were looking for modern appliances."

The other range of stolen items belonged to visitors or tourists to the museum. Five participants mentioned that visitors lost their cars, bags and other items that were not specified. The quoted statements were as follows:

R8: "There were people who smashed cars outside the premises and stole items that belong to tourists."

R16: "We have a restaurant, so sometimes you find that there is an event taking place and the set-up has to take place on the day before. Now the challenge is that we have a storeroom, but you find people complaining about stolen items."

R17: "We have problems when there are special events held at the grounds and many cars are parked, criminals succeed in stealing cars."

R19: "Yes, these criminals come in and steal every time. They jump the wall and come in. Do you remember that place that I showed you? They come in through that spot."

R23: "Snatching of visitors' bags by unknown people who live in the Burger Park."

Two participants reported cases of vandalism that involved the destruction of fibre boxes outside the museum and damages to visitors' cars. R3 indicated that there was petrol bomb arson in the museum house. The participants commented as follows:

R21: "Damage to visitors' cars during the student uprising."

R24: "I would say that there has been vandalism. I know those boxes for the fibre, where installed outside every property, and I saw that box has been broken."

R3: "Look into that and what is their role [security officers] in assisting things, like this house was petrol bombed twice. We have lost some of the things."

Three participants suggested that there was no vandalism committed in and around their facilities. R3 attributed the safety record to the tight security patrols in the museum. The participants were quoted as saying:

R2: "No, fortunately, we've not had a single incident of vandalism of equipment"

R16: "No, there is no vandalism, everything is still intact."

R18: "To the buildings there hasn't been vandalism. It was only around the parameter fence."

4.4.1.2 Robbery and/or burglary

Three participants said that there were cases of break-ins affecting house museums causing trauma to the residents and in one case property was damaged. R7 and R13 reported incidents of robbery where R7 mentioned that security officers were robbed on their way to work. The comments made by the participants were as follows:

R9: "Yes, we've had a problem where a break-in was reported at one of the cottages, but the alarm tripped off."

R12: "I'm not sure, I think it was a few years ago, there was an armed robbery."

R13: "We had a break-in that caused damage to the property. At least I got one of them arrested and he was sentenced."

R24: "I used to experience numerous break-ins, not people looking for museum items. The criminals kept asking me, where's the cell phone? Where's the microwave? Where's the TV? They couldn't find anything worth stealing."

R7: "The rise in squatters' risk museum assets and visitors don't feel safe. However, no incidents have affected visitors; only officers coming to work early in the morning have been robbed."

One participant indicated that there was no break-in at their museum. The respondent commented:

R8: "No, there have not been any break-ins in the last five years."

4.4.1.3 Fire

Six participants reported that a fire had broken out that affected museum facilities. R2 and R6 indicated that the fire spread within the museum facilities, while R4 and R16 reported an office fire and a fire in exhibition facilities, respectively. The only fire that burnt artefacts in the museum house was reported by R5. The views of the participants are supported by the following quotes:

R2: "On the 16th of June we had a fire outbreak, but we managed to contain it. It was in the property next door. It did come a little bit into our forest but luckily because the residents that live in the caravan park."

R4: "There was a fire outbreak only once, many years ago before I started working here. It was one office that caught fire."

R5: "I only heard that the risk of fire occurred three to five years ago before I joined the organisation. The house in the yard is the one that burned with the statues that were inside."

R6: "There was a fire at the premises that was started by people."

R11: "There was a fire that incurred (sic) but it was put out very fast before it could spread. It didn't affect anything significant."

R16: "We had a fire that started as result of the lights that were part of the exhibition, but nothing was burnt because it was just an empty space."

Four participants mentioned that there had been no risk of fire in their premises. All four participants had no record of fire that they were aware of as substantiated by the following quotes:

R7: "No, fire has threatened the artefacts except one that was outside but was blocked by the wall."

R13: "No, there was no fire outbreak in the last three, five or ten years."

R14: "Not that I know of any fire or floods in the museum buildings since I started working here".

R18: "There was no fire outbreak reported at the museum."

4.4.1.4 Flooding

Five participants confirmed that there were cases of flooding reported in their museum facilities. R1 and R8 had floods resulting from drain blockage and burst pipes, respectively. They stated that:

R1: "The only flooding that occurred was once due to drain blockage."

R8: "The flooding that we experience is from burst pipes within the premises. No, it did not affect any business operations."

The other three participants experienced floods from heavy rains that caused minimal structural damages to the museums. However, in all three cases, there was no damage to exhibitions, artefacts or art collections. The comments by R2, R3 and R13 substantiate the claims:

R2: "In 2018, we had severe floods and this whole place was flooded. I tell you, there were people that couldn't get over the bridge for two days. The buildings weren't affected. Obviously just the collateral damage to the roof and the gutters but nothing was washed away."

R3: "We used to have floods a while ago, I think about eight years ago. I think this structure wasn't built properly. But it didn't damage any of our exhibitions"

R13: "We were flooded and the whole roof came down. It happened last year in February. We made an emergency call, and they came immediately and repaired the damage."

R13: "The floods affected the main hall and there are no artefacts there. After we realised that the damage was done on the main hall, we needed covering (sic) all the artefacts with bubble wrap. We had to officially close the museum too."

Four participants commented that they had not experienced flooding in the museums. R24 qualified that the roofing of their facility was strong and waterproof. The participants were quoted as follows:

R4: "No, the museum has not experienced any natural disasters like flooding."

R9: "Flooding is not a problem in this area. No, we haven't had any."

R17: "Natural disasters such as flooding have not been a problem; we have not experienced anything like that."

R24: "No, there hasn't been any flooding and the roof also is not leaking at the moment. [There] have been leaks in the past but at the moment it seems pretty waterproof."

4.4.1.5 Opportunistic threats

Five participants mentioned other risks that museums and museum visitors were exposed to. These risks included the harassment and mugging of museum visitors by vendors and homeless people operating near the museums. R13 and R16 suggested that the proximity of homeless people made them likely to breach the security of the museums. R3 observed some visitors were left stranded after being accidentally left behind by their transport. R14 reported the dangers that patrolling officers were

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exposed to when the lighting was poor. The statements quoted below confirmed the experiences of the participants.

R3: *"We are currently having challenges with vendors and hawkers. We have got guys that are selling things outside, and they tend to harass visitors."*

R4: *"Yes, there are isolated cases where visitors got mugged outside."*

R13: *"There are homeless people who are sleeping outside the premises here. Some of the guys may be sleeping and checking the situation to see how they can breach the security."*

R16: *"We have guys that sleep in our meter box house, which is the main supply of electricity, we once welded the door but now they actually jump and stay inside."*

R3: *"When visitors are left here, the museum is forced to use its resources to assist the tourist because he/she was not picked up."*

R14: *"It's not safe when you are patrolling or during events at night, visitors can get bitten by snakes."*

4.4.1.6 Risks to artefacts and art collections

Five participants reported that there were cases of the theft of artefacts and/or art collections in their museums. R14, R16 and R25 mentioned that there was theft of items on exhibitions that included metal copper bars, painting of Miriam Makeba and a vase, respectively. The following statements support their views:

R14: *"We accommodate temporary exhibitions and remember those metal copper bars at the entrance, 27 of them are missing. We have no idea who stole them."*

R16: *"There was an incident whereby an art [piece] of Miriam Makeba was stolen during her exhibition."*

R25: *"The case of the stolen vase on exhibition for the 2010 World Cup was reported to the police. Although the perpetrator was seen on the CCTV cameras she was never caught, and the item was not recovered."*

The other two participants reported Venda beads stolen from the museum and an 18th century waist coat and other items. The claims are supported by the following quotes:

R21: "Venda beads were stolen from the museum in the last five years."

R24: "They forced the burglar bars, and I had some stuff stored in there. They stole an 18th century waistcoat and a few items of clothing, as well as tools and things like that."

Four participants specified that their museum was not exposed to the theft of artefacts or art collections. R7 indicated that the artefacts are secured in glass cubicles and R11 suggested that the artefacts in their museum could not be easily carried because of their size. They made the following comments:

R4: "No, there are no risks of artefacts and art collections reported."

R7: "The artefacts are protected in exhibition cubicles that protect the artefacts. No one has broken them to date."

R11: "There is nothing to steal here. The exhibitions are too big to carry."

R23: "There was no theft of artefacts from the museum."

4.4.1.7 Risks to museum assets

Seven participants observed that museum risks such as burglary, theft and fire resulted in the loss of museum assets. R4 revealed that the fire damaged the museum furniture, and the other six participants witnessed the theft of equipment such as computers, laptops and household items. The supporting statements are as follows:

R4: "It was just furniture that was affected and outside as well. The fire was caused by an air condition unit."

R9: "They took a few things from a cottage and some of them we found in the bushes some haven't been recovered so the case is still with the police. They took mattresses, mugs and other things from the cottage."

R11: "They took two computers and one safe."

R13: "The criminals attempted to steal equipment that is kept at the back for construction. They jumped the fence and tried to steal the equipment. One of them was caught by the security guard."

R19: "Apparently yesterday at 2am, people broke in and stole two laptops and a camera."

R21: "A staff laptop was stolen in the last five years."

R22: "Over the last 12 months, a robbery occurred during the night where computers with museum information were stolen.""

4.4.1.8 Reported cases

Thirteen participants mentioned that the cases of theft and burglary were reported to the local police station. Out of 13, only two cases led to the arrests of some of the perpetrators.

Eleven participants indicated that their cases were reported to the police, although no arrests were made and no assets, artefacts or art collections were recovered. This was substantiated by the following quotes:

R1: "Yes, a case was reported to the police."

R3: "Yes, we called the police and went there to make a statement."

R9: "…so the case is still with the police. They took mattress, mugs and other things from the cottage."

R12: "It was reported to the police and was also reported to Interpol."

R16: "Yes, we reported the case at the central police station."

R17: "The cases of stolen cars were also reported to the police at Rosebank Police Station."

R17: "No, the people who steal here don't break the cars in any way they are professionals, so the cars have never been recovered."

R21: "The theft of Venda beads and staff laptops was report to Sunnyside police station and the perpetrators were not caught."

R22: "The computers stolen were reported to Cullinan SAPS. The perpetrators were captured in the CCTV footage, but they were not known."

R23: "Even if the case was reported the perpetrators were not arrested."

R25: "The case of the stolen Vase was reported to the police. Although the perpetrator was seen on the CCTV cameras she was never caught, and the item was not recovered."

Participants 8 and 24 were the reported cases where the criminals were arrested, but the items were never recovered. The other case of burglary reported to the police by R24 was to no avail. It was alleged that the police did not cooperate or assist. The participants gave the following statements:

R8: "The police were able to catch and arrested the person. The stolen items were never found."

R24: "I reported the case to the police station. The police were not helpful; they didn't even come to see the place. The other case of theft was reported, and the criminals were arrested. I had to go to court five times because every time the policeman that arrested them was not available or the fingerprint expert was not available. It was most annoying but eventually they were sentenced."

Participant 14 failed to report the case to the police because of lack of evidence. The items stolen were therefore never recovered as quoted below:

R14: "For the 27 stolen copper metals we did not report the case to the police because we didn't have enough evidence to open one."

4.4.1.9 Museum visitors

In a bid to understand the risks affecting museum visitors there was a need to determine who these visitors were. Eleven participants provided the different groups of visitors who came to the museum. Respondents 1, 10 and 11 had visits from students apart from the general tourists, as confirmed by the comments below:

R1: *"We deal a lot with the visits of school students, apart from other general visitors."*

R10: *"Students constitute the highest number of our patrons for the museum."*

R11: *"We receive quite a lot of people, especially when schools come to visit, they come in big groups."*

Four participants did not specifically classify the nature of their visitors, just indicated that they received visitors. What is clear from the statements of the respondents is that all the visitors were provided official access to the museum, as supported below:

R6: *"Yes, when the visitors come and finish their tour, they go to the hall which has the projector."*

R7: *"The security gives visitors access when they arrive at ticketing, they are given a wristband. So if you don't have the wristband, you can't gain access."*

R12: *"For visitors we have got opening hours from 10am to 5pm, from Tuesday to Sunday. If you want to use the library, you have to make an appointment because we do not [have] a librarian."*

R21: *"Only guided and booked tours are allowed in the museum. The museum is inside the university premises."*

The other three participants indicated that there had been visits by people using the museum facilities for recreation. Such visits were not targeted at touring the museums to see the artefacts, but rather for weddings, birthday parties and picnics, as noted below:

R1: *"We also host events such as weddings as well."*

R2: *"Yes, people do dog walks, picnics. They come for birthday parties."*

R6: *"Yes, visitors also come down here for recreation. They come here to book to spend the weekend and have self-catering."*

Participant 5 mentioned that their museum was no longer receiving visitors because the artefacts including statues and portraits were moved to other museums. The respondent commented that:

R5: *"No one has ever visited this museum since I have been here. This museum is like a deserted museum. It was a real proper museum a long time ago, when we had statues and portraits."*

4.4.1.10 Museum Income

Regarding the increased risk to museums, participants revealed that museums receive income from visitors, and some have internal pay offices. The income was spread between entry fees paid by visitors and fees for hiring facilities.

Nine participants indicated that their museums charge different rates for visitors. There are fares for adults and children, as well as local and international prices. This is substantiated by the following statements:

R1: *"Yes if they come here, they pay at the office. They pay R30 per person when they visit the museum."*

R6: *"When the visitors come, they are expected to pay when they enter."*

R9: *"We do charge fares; nationals pay R50, international guests pay R65 and for students it's also different."*

R11: *"When visitors come to the museum, we charge them R30 for adults and R15 for kids."*

R17: *"People come here and pay R40 for entrance, R20 pensioners and R30 for children. People come here in search of information, some for just a tour."*

R18: *"Most of the time they are escorted to the reception, then they pay there, they then receive a brochure and a ticket. If client is unable to pay, we escort them out. We have local and international prices."*

R20: *"Our fares are as follows; adults R25, pensioners and students R12 and R7 for children."*

R2: "Somebody goes down to relieve him because we generally collect the money at the gate. The guy that comes to relieving takes the cash before he goes on patrols."

Participant 2 further shared that the museum hired out facilities to tenants to generate more income. The respondents said:

R2: "That is income for us. It [is] a good income for us and then we have tenants [clients] that we hire out the facility to."

R13: "We have got a notice that indicates that there is no charge for the museum. Museum entry is free."

Participant 13 responded that there was no cash received at the museum facilities. All the bookings were made at the city offices and proof of payment is produced on arrival, as noted below:

R13: "We have got a book that we record everything that is happening in the museum. Even for book launch books. I do proper booking; they pay the city and bring the proof of payment."

RQ2: What is the impact of the different types of security measures implemented to protect museums in Gauteng, South Africa?

The focus of this question was to determine the current security measures deployed to protect museums in the Gauteng Province. The answers provided by respondents provided an understanding of the impact of security measures on the safety of visitors, artefacts and art collections in the different museums.

4.4.2 Museum Security Measures

The analysis outlined security measure themes commencing with the security plans, security policies and procedures, technological and manual security measures. The effectiveness of the security measures was established by the security specialists in the different museums.

4.4.2.1 Security plan

In answering the question about the existence of a security plan, the participants had different views. The objective of developing a security plan was to reduce the vulnerabilities of museums, increase security capacity and reduce security risks.

Four participants provided direct answers about their museum having a security plan document. R4 shared that the plan provided security operating procedures as quoted below:

R4: "Yes, we do have written security operating procedures that we follow in the facility."

Participants 12 revealed that the security plan did not exist as an independent document, but was embedded in the occupational health and safety plan as communicated below:

R12: "The security plan is incorporated in the Occupational Health and Safety Plan."

Participants 21 and 25 were from university campuses and they confirmed that their security plan was part of the university's security plan. This meant the security officer had to follow the company security plan developed by campus security managers. Their answers were as follows:

R21: "Yes, there is a security plan as part of the broader university security plan and not specifically for the museum."

R25: "Yes, there is a security plan that was developed by the Campus security manager."

Participant 23 indicated that the museum did not have a security plan, but used the one for Tshwane Metro Police, as quoted:

R23: "As a museum we do not have a security plan, but the plan should belong to Tshwane Metro Police, the responsible security."

Participant 4 said there was no security plan, but there was a security policy. This was an indication that the participant might have known that a security plan contains a security policy. The quoted response was that:

R14: "We do not have a security plan, but we have a security policy."

Participant 10 shared that no security document was in place, but it was communicated verbally, as stated below:

R10: "I remember when I got hired in 2008; I went through a training process, but I didn't see a written document. No, at this museum, the security plan is verbally issued"

Participant 22 reported that the museum did not have a security plan. The direct response was as follows:

R22: "No, there is no security plan for the museum."

4.4.2.2 Security policy

Out of the 22 participants (the other three participants chose not to answer the question) to the question about the availability of a museum security policy, eight directly confirmed the existence of the policy. Five participants went to at least explain a security procedure. Nine participants reported that they had not seen a security policy.

R14 responded that their museum had a security policy, while R21 and R25 reported the security policies are embedded in the university security policies. This is supported by the following quotations:

R14: "We have a security policy that was approved; it was approved on the 19th of April 2019 by the chairperson of the council."

R21: "Yes, the security policy is also part of the university security policy."

R25: "There is a written policy document which is not specifically for the museum, but for the university campus. It would be necessary to develop a separate security policy for the museum."

R2 and R3 said that their security policies were engraved in their health and safety policies, as substantiated by the following statements:

R2: "We have a security policy that is tied up with our health and safety policy."

R3: "That document we have; it is under the health and safety policy. We are working with the health and safety policy. We also work issues such as evacuations."

Participants 7, 12 and 13 indicated that they use security policies that are provided by their metro police services. In that case, the museum did not have a separate security policy as quoted below:

R7: "We do have a security policy that was developed by JMPD."

R12: "Yes, we at the museum don't have a security policy but the metro police might have one."

R13: "But I think JPMD does have a document that gives them highlights on what they have to do and how they have to do it."

Participants 7, 9, 14, 15 and 18 responded to the question about the security policy by providing different procedures that were in place. The procedures including visitors' access, inclusive of walking and driving visitors, employees' access to offices and the security induction of new employees. The supporting evidence is stated below:

R7: "All procedures must be recorded so officers at the gate have the step-by-step procedures. The external procedure is there so we know how to handle visitors at the gate. Even supervisors from the office have to be announced over the radio when a person arrives."

R7: "Driving visitors are searched together with the passengers in the vehicle. They report to the control room and are registered in the OB [Occurrence Book] and give back the person who registered the OB number. The people are directed to the parking zone and then allowed to open with their fingers. The officer who searches drivers

when they leave the premises announces their departure and the process are called on after hour's procedure for staff."

R9: "The person will be brought to my office for introduction and then I alert all the other security officers that there's a new employee, so they know the employee."

R14: "The document we have here is for opening and locking offices. In case someone wants to open the office and doesn't have a key, there is a document they need to sign so we open for them."

R14: "We have a draft procedure for employee access. If a person is not on duty and wants a colleague to enter his/her office, we can open the office and the person we opened for should sign. Employee access to the office is through biometric system and keys."

R15: "Yes, there is a clear procedure that is followed by visitors. The procedure is kept in the control room."

R18: "When new employees come in to work, they sign in as contractors coming to work and they are appointed a security officer to escort them around."

Nine participants reported that their museums did not have security policies. R6 revealed that there was no training provided for security procedures since joining the organisation. Participants 1 and 17 mentioned that they underwent verbal training on how to operate without written security policies. The views of the participants were supported by the following statements:

R1: Yes, I haven't seen any written security policy. We are just verbally instructed of what we should do."

R6: "I don't know of any security policy. Even the expected training, I didn't go through it when I joined the organisation."

R9: "No we don't have a written security policy in place."

R15: "I cannot confirm about a security policy because I have never seen or heard about it."

R16: "We don't have a security policy. I am not aware of the existence of this document."

R17: *"I have not seen a written security policy. We are only verbally instructed on all procedures and how to do everything."*

R19: *"We do not have a security policy."*

R22: *"There is no document for museum policy."*

R23: *"I have not seen a security policy, because the service is outsourced to Tshwane Metro Police."*

4.4.2.3 Emergency plan

Seven participants provided information about how their museums were prepared to deal with emergencies. The participants indicated that there were plans in place that are used when evacuating workers and visitors during emergencies. In most cases, employees had training and emergency drills that were conducted twice a year. The participants said:

R2: *"Yes, that emergency plan will include disaster, fire, evacuation and other risks."*

R9: *"We have an emergency plan with a clear exit route and the fire extinguishers that are reviewed every year."*

R10: *"Yes, the institution has a functional emergency plan. Once a year, a health and safety training is conducted for emergencies like fire."*

R13: *"We do have an evacuation plan that is followed when there is an emergency."*

R14: *"The museum has an evacuation plan. The plan was approved, and employees are trained and drilled on how to respond in case of emergency."*

R15: *"We do have an emergency plan for evacuating visitors and employees that is kept at the starter entrance. We do evacuation drills twice a year."*

Participant 3 mentioned that the museum emergency plan was contained in the health and safety plan, as quoted below:

R3: *"Yes, we have got the health and safety plan. We also have to comply with the policies that state the health and safety rules."*

Three participants stated that there were no emergency plans in their museums. Participant 19 shared that the museum had a plan for fire emergency that was terminated because it was not applied properly. The supporting quotes were as follows:

R11: *"No, I am not aware of any emergency plan that is available for the facility."*

R17: *"I can't say I've seen the document, but we always have fire drills conducted where we practice escape routes."*

R19: *"We do not have an emergency plan. I remember we had something for fire emergency, but they didn't follow the correct process, so we terminated it."*

4.4.2.4 Maintenance plan

Five participants shared that they follow maintenance procedures when making repairs in the museums. Two participants stated that they do have maintenance plans that they adhere to when executing repairs, as supported by the two quotations below:

R8: *"They did provide us with the maintenance plan. What we do have worksheets [sic] that we use to follow the repairs that were done. For example, we can check the maintenance conducted in June from the records."*

R12: *"We do have a maintenance plan that guides the maintenance procedures. "We have one person who does small maintenance issues, he assists us with that, and the city council does major maintenance for us."*

Three participants specifically mentioned that they adhere to procedures when allowing the maintenance workers to access the museum premises. Participant 3 had an in-house maintenance manager, while Participants 4 and 7 relied on external maintenance and security conducted access control, as substantiated by the following quotations:

R3: "When people come into the museum to fix a repair, they are supervised by a general maintenance manager. He ensures that they walk in and their cards are scanned. We always try and avoid letting them work during the night for security reasons."

R4: "We give the contractors a separate register book if they come in big groups of five going upwards."

R7: "It is under the Park operations from the department that conduct the maintenance of the museum."

Two participants clearly stated that they had no maintenance plans in place. Participant 14 reported that the museum that he served was not maintained properly. The participants commented as follows:

R14: "I don't think there is [a] proper maintenance plan since there is a lack of maintenance here at this museum."

R18: "There is no maintenance plan, unless it is part of one of the other policies."

4.4.2.5 Security manager

The findings suggested that they had security managers at the museum sites, while two museums under the city authority operated under the management of the metro police. Ten out of the 25 participants answered this question. In five cases, the security managers were a permanent employee of the respective museums. The comments below support these views:

R2: "What we do is we have a security manager that lives onsite. We also have a health and safety manager who lives on site."

R15: "We work under a security manager that is an employee of the museum and not our security company."

R19: "Anything related to security must be reported to the security manager."

Participants 21 and 25 had security managers that served the entire university campuses and oversee the implementation of the security plans, as stipulated below:

R21: "Yes, the museum has a permanent security manager who is part of the broader university security."

R25: "Yes, there is a security plan that was developed by the campus security manager."

In the museum facilities where Participants 8 and 13 were contracted, the security managers were from the Metro Police, as confirmed in the quotes below:

R8: "I'm an operations manager and I oversee security issues as well. I'm contacted to the JMPD."

R13: "No, we don't have a security manager, but we have contracted security from the City of Johannesburg's core function of Metro Police, which is the JMPD."

Three participants revealed that they did not have security managers in their museums.

R1: "Yes, we do not have a security manager, a person who oversees the security of the facility."

R3: "When you are operating as a small company, one person is responsible for a lot of roles, but we do not have a security manager."

R12: "No, we do not have a security manager for the facility."

4.4.2.6 Contract security

The security of most of the selected museums was provided by contract security from private professional security companies. The practice of outsourcing the security of the facilities was balanced with internal security in other museums.

Seven participants shared that the only security in their museums was outsourced security. In some house museums the security lived on the site, as quoted in the statements below:

R1: *"So the security here is from a contractor."*

R2: *"We have a professional company called forensic security solutions. They live on site. The staff provides us with 24 hours security and is fully armed."*

R5: *"The security for the museum is provided by a private security company."*

R14: *"Yes, we are working as a contracted security company which may be renewed by the museum authority."*

R15: *"We are a contract security assigned to ensure that the museum facilities and the people inside are safe."*

R19: *"Yes, because the security for the museum is outsourced security."*

R20: *"Yes, there is contract security, yet the Metro Police officers do random patrols."*

Four participants indicated that their security was a partnership between outsourced and in-house security providers. The participants had the following to say about the security in their museums:

R4: *"From the private company, we are two guards and in-house, they employed four guards. This means we are six, but the in-house guards are granted off days on some days."*

R10: *"We try to involve different business partners for security services."*

R21: *"Yes, the museum has both in-house and private security companies providing security."*

R25: *"Yes, there are outsourced security companies in the university campus."*

Three participants who operated in museums owned and run by metropolitan reported that they were secured by metro police.

R8: "We have recently in-sourced security; all along we had been outsourcing security from a private company. They are employed under JMPD."

P12: "Yes, the security is part of the Tshwane Metro Police; they appoint security companies, so they appointed a security company for the museum."

R13: "JMPD is the one that source out the security for all our facilities in the municipality but within the museum, we don't have a permanent manager who is handling security."

4.4.2.7 Cleaning staff

Most of the participants suggested that they had both permanent and contracted cleaning workers. The responses revealed that the number of cleaners was determined by the size of the museum. Thus, house museums had the lowest number of cleaners, and their access procedures were not specified.

Three participants indicated that their museums had permanent cleaning staff (some at least one permanent staff member), as confirmed in the following comments:

R2: "Yes, we have got all permanent cleaning staff."

R2: "We've got the cleaners. We are embarking on up skilling programs for them. For instance, one cleaner has been here for 21 years."

R3: "We have got one permanent cleaner."

R18: "We mostly have service providers contracted for cleaning. We only have one permanent cleaner."

Six participants further provided the access procedures used by their museums including control sheets, uniforms with tags, and visitors' tag for contracted workers, as quoted below:

R3: "We have a control sheet for the cleaners. The workers also make use of a duty roster."

R4: "They used fingerprints, which are loaded on the system. They are here mostly on three-year contracts. We have contractors that work between two and three days are escorted everywhere they go."

R6: "The contract cleaners are introduced to us when they come, and we show them around."

R7: "Cleaning crew like pest control is given a visitor's tag written contractors. So, on arrival they can be identified as cleaners. They sign the visitors' book and are escorted around the site."

R9: "Our internal cleaners have a uniform with tags that they are cleaners when they arrive at the entry point, they sign in at the guardroom that they are on site."

R9: "We have some cleaners from EPWP [Expanded Public Works Programme] and a few that are employed by the museum."

R11: "The cleaners that work at the museum are contracted."

R14: "We do not follow any unique procedure to control the access of our contract cleaners."

R15: "No, we don't have internal cleaners, but we contract cleaning employees who [are] allocated access cards to use when entering and leaving the museum."

R16: "There are no permanent cleaners in the museum, so we rely on three contractor employees."

Once again, Participant 5 shared that there were no cleaners at the museum because the museum had not been operating since artefacts had been removed.

R5: "We do not have cleaners; this museum has not been functional because some of the items were moved."

Lastly, participant 24 shared that at the time of the interview, the house museum did not have any cleaners, instead, there was a gardener, as supported by the statement below:

R24: "Well, I have been doing all the cleaning up to now but just about two weeks ago, a friend said that he would sponsor a cleaning lady for me, once or twice a week."

R24: "…I do very little work in the house anyway, but I do have a gardener. He's been working full time for me."

4.4.2.8 Contract workers

Seven participants shared that their museum facilities make use of contracted employees for mainly repair and maintenance services. The contracted employees adhere to clearly defined access procedures that are part of the security policy. The procedures include the signing of work permits, uniforms with tags, access cards, escorts and the use of number codes, supported below:

R2: "When we do have contractors coming in to do patching or whatever. The contractors are expected to complete a work permit, which also indemnifies the organisation against any claims by the contract workers. When the contractors arrive onsite, our health and safety officer inspects their equipment and their gear, to make sure they comply with the rules."

R7: "Contractors use the similar procedure to that of visitors. They come in and we check the equipment they come in with before they are escorted, they sign the register."

R14: "We escort contract employees around the premises but there are no standard procedures of dealing with them. We do give them access cards."

R15: "Contractors are allocated a specific access gate separated from that of the visitors."

R16: "The contract cleaners actually have specific places they should clean, so they are enrolled in the matrix system, for them to be easily identified."

R17: "When a contractor arrives here the security officer will ask where the person is going before asking him/her to sign in. The person is later escorted by the security officer to the intended area."

R18: "For now, what we do is that when they arrive, they are introduced to the security supervisor, and then I introduce them to the entire staff. They also use the same access area as us, which is a number code."

4.4.3 Current physical security measures

The existing types of security measures installed in different museums range from the non-technological systems, access control and digital technologies.

4.4.3.1 Non-technological systems (NTS)

The NTS are systems that have limited operating flexibility which include fire equipment, security officers, security fence and lock-up gates.

4.4.3.1.1 Security officers

Twenty-one participants shared that their facilities had security guards assigned to patrol the premises during the day and others during the night. The numbers of security officers on duty vary from one museum to another from a minimum of two guards to 20 guards depending on the size of the museum. The participants made the following statements:

R1: "Oh no, two guards at night and two during the day."

R2: "We do a lot of perimeter patrols officers [sic]. Specifically, to protect our grounds because once the squatters put up a structure it is almost impossible to remove them."

R3: "We make use [of] three security officers who work in the facility."

R4: "Sometimes security officers work in groups of four, sometimes we are three."

R5: "We have two guards assigned during the day and two guards at night."

R6: "There is no foot patrol at night. We use the cars; there is no need for portable outdoor lighting."

R7: "We have 20 officers including supervisors. At night we have 12 officers including supervisors and armed response."

R8: "We have nine guards who work three guards per shift. They work two days and two nights."

R9: "We have two security officers patrolling during the day and three at night."

R11: "Three security officers are deployed during the night and one officer is deployed during the day but on the weekend, we deploy two officers during the day."

R12: "We have security patrols that are made around the building and the entire site."

R13: "So, for us as security officers we physically protect this building, the artefacts and whatever is in this building. If this building burns down, the whole history of the workers is gone."

R14: "The auditor said we must start searching visitors at the gate. We search the bags of visitors when they are leaving the premises."

R15: "Security officers walk around the museum, mainly at areas of high risk such as the museum entrance. There are also specific check points."

R16: "There are three security officers on guard and patrol during the night shift."

R17: "In the afternoon we have five security officers on duty and then two security guards at night."

R18: "For day shift we have three security guards, at night there [are] two officers at specific posts, one on site and one at the museum."

R20: "We have security guards, two during the day and two at night also."

R23: "One security guard is assigned during the day and another one placed on night duty."

R24: "My gardener does walk around the garden at night, checking that everything is okay because he is very security conscious."

R25: "We have highly trained security officers that man the gates and patrol the campus."

Three participants mentioned that the security officers conduct patrols in strategic areas around the facility such as exhibition section and museum records section, while other security officers were assigned to escort the visitors when they walk into the museum before touring the premises, as quoted below.

R1: "Oh no problem, we assign security officers to patrol certain points."

R6: "Our security officers are the ones that escort the visitors when they walk into the museum before they start the tour."

R18: "It's our visibility and the escorting of visitors that has improved security."

4.4.3.1.2 Security fence

Twelve participants responded that there was a fence around each of their museum facilities. Three of the twelve museums had fences that were electrified, although one of them was currently disconnected. The participants commented as follows:

R3: "We have an electric fence around the facility that it is serviced every six months."

R18: "Then we decided to build a wall and put electric fence, to prevent vandalism."

R7: "We have the wall and electric fence; the electricity is currently not connected."

Two participants indicated that the fences in their institutions had snap razor wire and spikes, respectively, as quoted below:

R2: "We've got very good razor wire. It's called snap razor wire. If it cuts you it can actually remove your arm. It's very dangerous."

R6: "We have a fence that has what looks like that razor wire."

R4: "It is not electrical; it is a normal fence. We recently installed spikes on the fence."

Six participants revealed that the fences in their museums were neither electrified nor equipped with razor wire.

R1: "Yes, the fence goes all the way that side and it meets up with the fire tanker that side."

R5: "Yes, the museum is secured by a simple fence."

R11: "We have a security fence around the premises, but it's not electrified."

R14: "A fence was installed to prevent unauthorised access."

R15: "The fence is a combination of both wall and wire."

R17: "The museum has a security fence which is not electrified."

R23: "We have a parameter fence that is not electrified."

4.4.3.1.3 Lock-up gate

Nine participants shared that there were entry gates that were locked-up at the end of a working day. The gates helped to restrict access to intruders during the day and at night when the museums were closed. The views were supported by the following comments:

R4: "We do have turnstiles gates."

P6: "Yes, we lock up this gate and no one enters after 4pm."

R11: "When we end the day, we lock the gate and the building."

R15: "At knock-off time, we lock the access gate and ensure that it is checked regularly."

R16: "Normally people knock off at 4.30pm. Security wise, we lock the gate at 6:00pm."

R17: "We close all the gates and doors then no one is allowed to enter after the normal operating hours."

R18: "We lock the premises after hours, but we have a patroller on guard for the night."

R20: "We still have to lock the museum after hours, otherwise the place will be vandalised."

R25: "The University has a secure parameter fence, and the museum is a museum facility."

4.4.3.1.4 Armed response

Four participants reported that they had armed security to respond to their alarm systems when they detected intrusion. When the risk of intruders was detected by the alarm systems, the armed response security had to make a timeous move to investigate, as suggested below:

R2: "We've also got ADT. ADT respond[s] to alarms, they come in and they offer surveillances. The guards do the patrols at night."

R3: "We are currently guarded by armed response. So, after hours it's going to be armed response. We also have an effective alarm system."

R3: "But then we've answered that by putting the ADT security in place. We have our own guards that we have employed. We have got three permanents at the moment."

R13: "It is also connected to SOS because they are the company who respond to the alarms if they are triggered."

R20: "The house downstairs has good alarms and staff."

4.4.3.1.5 Access control

Fifteen participants indicated that visitors, employees and students were expected to follow access procedures when entering the museum facilities. The access control

systems for visitors reported by most of the participants were visitors' registers which they sign when they enter and exit the premises. The participants said:

R1: "Yes, the access control is the sign-in system for all the visitors."

R4: "Yes, we use a visitors' register where the visitors are given a book to sign before they are able to access [the] museum."

R6: "We also use a visitors' register. When they leave the office, we search them and we also search staff members as well."

R9: "We have an access book where we complete the names and registration numbers of any person who comes in with items such as a laptop the code for the laptop."

R11: "When visitors come, they are made to sign the visitor's book and we hand them a visitor's slip."

R13: "I have compiled a booking form whereby if someone wants to visit, they must call and fill the forms. One of those forms they must fill is an indemnity form."

R13: "When they come in, we have a register attendance form. When they come with access numbers, we use the register form."

R16: "Yes, we sign the access register every time we enter and leave the museum premises."

R25: "To access the museum, visitors have to be [sic] book online in advance, but sometimes the technology fails thereby delaying booking by visitors."

Four participants reported that employees and students used customised accessed cards with their biometric information.

R4: "We also have CCTV cameras and a biometric system."

R7: "…there are 2 main entrances which have biometrics and CCTV at the access."

R8: "Everyone that works here has got access cards. There are some people who do not have access cards. They do not even know what I am talking about when I talk about access cards."

R10: "Students use access cards and fingerprint which is a double access control in case unauthorised persons in possession of student cards would want to enter the premises with cards that do not belong to them."

Two participants reported that their museums made sure that visitors used one access point as noted from the quotations below:

R18: "Our visitors are expected to come through the reception. They are no longer expected to use the other gate which is meant for cars only. We also search cars on access points."

R2: "It's only one access point, it's the reception. We have one access and exit point."

4.4.3.2 Digital technologies (DT) security measures

Some museums had both non-technological and digital devices as security measures. The DT reported by the participants included CCTV cameras, alarm systems, scanners, and metal detectors.

4.4.3.2.1 CCTV cameras

Fourteen participants shared that there were CCTV cameras at their premises as a security measure. The concentration and integration of the installed cameras varied from one museum to another.

Three participants responded that there were many cameras in their museums, as supported by the following statements:

R2: "We do have eight cameras in the house and the monitor is in the receiving area. The footage is viewed regularly to see if there was nothing that we could pick up with regards to suspicious behaviour."

R7: "Both the museum and administration have CCTV cameras where there are two main entrances which have biometrics and CCTV at the access."

R8: "We have 32 cameras that are working but our main problem is maintenance of the cameras. The disadvantage that we have guards who do not know how to use the CCTV system."

The other ten participants just indicated that they had CCTV cameras in their facilities; however, they did not provide the numbers. The participants had the following to say:

R1: "Ok no problem, so here at the gate we have security measures such as CCTV cameras."

R4: "We also have CCTV cameras and a biometric system."

R11: "Yes, they put the CCTV cameras just last month."

R12: "We have CCTV cameras that are in place and are working."

R13: "I think that one of the issues being discussed has to do with the City's 4th industrial revolution program. The CCTV cameras have been implemented in libraries and sporting facilities."

R15: "The museum has CCTV cameras that are functional and effective as well as a security fence."

R22: "Yes, we have the CCTV cameras at the administration offices, an old fence and security officers."

R23: "We have cameras situated in specific strategic areas only."

R24: "I have got a couple of security cameras but not in every room because I cannot afford it. I would like to get more of them."

Participant 25 stated that although there were CCTV cameras in place, the monitoring was not done consistently as indicated below:

R25: "The facility has functional CCTV cameras that are not regularly monitored."

Participant 16 mentioned that the CCTV cameras at the museum were not working for a long time, as substantiated by the statement below:

R16: "No, the challenge is our cameras do not work since 2017. We have reported this much time [sic] but nothing has been done. The camera system has failed us."

4.4.3.2.2 Alarm systems

Five participants stated that alarms were installed in their museums. All the alarm systems, but one was operating effectively. The participants had the following to say:

R2: "We also have about 18 alarms in the house."

R13: "Yes, in the morning when I arrive, I deactivate the alarm. I lock it at 5 o'clock the day before and open at 8 o'clock. The alarm is deactivated the whole day until the time of locking up."

R24: "Yes, I also have an alarm system with a service provider who responds to the breach of the system."

R25: "There are alarms that add to the security measures on the museum."

Participant 23 reported that the alarms at the museum were not functional, as quoted below:

R23: "There are intruder alarms that are currently not working."

4.4.3.2.3 Scanners and metal detectors

Two participants highlighted that their museums had scanning machines for detecting items that were not allowed in and out of the museum. The participants made the following comments:

R15: "We use the hand scanning machine to detect any unauthorised items such as guns."

R18: "The current security measures we have are scanners. We just recently implemented the use of scanners."

One participant indicated that security officers used metal detectors to identify unauthorised items in and out of the museum. The participants commented as follows:

R16: "We have a metal detector and the handheld ones. We have to search because a person may walk out with our stuff."

4.4.3.2.4 Fire equipment

Fifteen participants indicated that there was fire equipment in their museums for use in case of fire. Most of the museums had fire extinguishers that were serviced on an annual basis. In other museums there were fire hose reels, fire hydrants, fire panels and fire control detection system as security measures for fire. The following statement support their views:

R2: "Okay, so we've got 37 fire extinguishers in the house, very large ones. We have two row hose wheels. One on this side of the house, one on that side of the house and there are two fire hydrants around the property. Also, we've just put in some irrigation, where we-do pop-up sprayers for fires as well and they will come straight from the borehole. So, that's accessible immediately."

R4: "We have fire extinguishers that we service on an annual basis."

R6: "Yes, we have fire extinguishers, but most of the equipment is inside the building because that is where fires are likely to start."

R7: "We have an annual fire fighting equipment service."

R7: "We have fire panels that send fire signals when there is a fire."

R10: "Yes, we do have fire extinguishers that are checked twice a year to verify if they are still [in] a good working condition."

R11: "We do have fire extinguishers that are serviced on an annual basis. We don't have fire detectors and fire sprinklers."

R12: "Yes, we do have firefighting equipment. The equipment is supposed to be serviced once a year, but it depends on situations."

R13: "Yes, the fire equipment is serviced on a regular basis. I think as we speak, the fire extinguishers will expire next year."

R14: "We do have a fire control detection system that is working."

R14: "Fire extinguishers are readily available for use in the event of a fire. They are even check[ed] and serviced on a regular basis."

R15: "We do have fire extinguishers, but I am not sure how often the fire extinguishers are serviced."

R16: "We do have fire equipment, especially fire extinguishers that are serviced on a yearly basis. They were last serviced last year November 2019."

R17: "People come and check the pipes and the fire extinguishers are replaced. We are instructed to switch off all switches in the museum because sometimes there could be a fault so at night."

R18: "In writing, it is not there, but servicing does take place. Last month we serviced fire extinguishers."

Participant 19 confirmed that although the museum had fire extinguishers, the servicing of the equipment was inconsistent.

R19: "We do have fire extinguishers that are not regularly serviced."

Participant 5 was the only participant who shared that there were no fire extinguishers in the premises where he worked, as quoted below:

R5: "No, there are no fire extinguishers in the premises that we can use in the event of a fire."

4.4.3.3 Other security measures

Two participants shared that their museums used glass cubicles to protect artefacts and art collections from damage and theft. The glass cubicles are locked using key combinations that were well secured. The participants commented as follows:

R14: "There has been no theft of artefacts because the artefacts and art collections are secured in glass cubicles."

R21: "Glass cabinets are for preventing theft of the artefacts and art collections. Key combination doors are for control access. These security measures are very effective."

Participant 2 indicated that their security company was using drones to monitor the occurrences of unwanted activities within the premises and partnered with the local policing forum to fight crime. The participant had the following to say:

R2: "But you can see heavy activity because we do droning. Our security company uses drones once a week to see if they can pick up pathways, a new path patterns or activity, and there is a lot of activity. So, you know, you just got to be aware of it and you just put a [sic] stand together."

R2: "The Lyttelton sector policing forum has got a 24-hour satellite. They react actually faster than the police."

4.4.4 Shortcomings of the current security measures

The themes of the shortcomings of the existing security measures include: limited CCTV cameras, security fence/wall, security officer shortages, ineffective access control, insufficient systems and facilities, faulty alarm systems, and informal settlements. The themes are identified from the analysis of the verbatim statements of the participants. The field data shows that most of the CCTV cameras installed in the museums had several limitations as presented below. In a few museums, CCTV cameras were never installed and were therefore, non-existent in the premises.

4.4.4.1 CCTV cameras

Seven participants reported that there were working cameras in their museums. However, the concern raised was that the cameras that were installed were limited, as supported by the comments below:

R4: "There is only one camera at the back and like I said there is no one to monitor the CCTV cameras."

R21: "There are CCTV cameras installed in the museum corridors."

R23: "The intruder alarm is not working, CCTV cameras are in limited areas, and security fence is not electrified."

Four participants revealed that, although cameras were in place, their effectiveness was questionable. R2 responded that criminals cover their faces with masks which make it difficult to identify them; while R4, R11 and R22 shared that their CCTV cameras are not monitored in real-time:

R2: "…cameras are not a deterrent, as criminals may wear balaclavas, which makes difficult to recognise them. That's why we like to be more hands on, and we have trained our staff to be very alert."

R4: "We have cameras, but no one monitors the camera control room. Sometimes you find someone sitting there but not always."

R11: "There are working cameras at the reception and in the house, but the ones at the gate do not work. The cameras are not constantly monitored but are watched the next morning."

R22: "The security measures are not effective as CCTV cameras as [they] are not monitored so there is no immediate response to intruders."

The field data from four participants confirmed that there were facilities with cameras that were not working. The participants were quoted saying the following statements:

R16: "I can say that currently the parameter cameras are not working. Inside the building, just a few cameras are working."

R17: "Yes, we do have CCTV cameras, but some are not working properly, and the biometric system has a fault, it works sometimes but not always."

R14: "The CCTV cameras are not working properly. They regularly go off prematurely. However, the contractors informed us that they were going to fix the problem."

R7: "For now all the CCTV cameras aren't working for about a year, we have appointed someone to work on them."

Five participants mentioned that there were no CCTV cameras installed in their museums. There are promises in some museums that cameras would be installed soon. This was substantiated by the following statements:

R5: "No, we don't have CCTV cameras. There is electricity here, but there is no water. It's just a place."

R6: "We don't have CCTV cameras on our facilities which can improve our security."

R13: "We are facing a high crime rate. They promised to install cameras and the equipment to scan firearms at the entrance."

R18: "No, we don't have any CCTV cameras but I'm not really sure if they can install them since most of these buildings are heritage sites."

R19: "We don't have CCTV cameras. We are working on it with ICT infrastructure for security. I think by the end of this financial year we would have implemented them."

4.4.4.2 Security fence/wall

From the field data, six participants mentioned that their museums were fenced but not electrified, except for one. R7 acknowledged the availability of an electric fence but that it was not connected to electricity.

R7: "We have the wall and electric fence, but the electricity is currently not connected."

Five participants had the following to say about the fences and lack of connectivity to electricity:

R1: "It's just a fence. The fence is not connected to electricity."

R6: "No, our fence is not connected to electricity apart from having the razor wire."

R14: "Our fence is not electrified. At this museum we [are] luck[y] that it is not situated in the CBD or a busy area thus we do not experience any robberies because our security systems are lacking."

R22: "The fence that is not electrified does not deter criminals and the number of security personnel is few."

R23: "…and security fence is not electrified."

Two participants shared that their museums were fenced, but there were no lockable gates or gates were not closed at the facilities, as commented below:

R3: "We had a problem with the gate, and we only had one gate."

R14: "The other thing is we do not close the main gate at the museum. As you can see the main gate is open."

Two participants reported that their museums were not fenced. R12 mentioned that the fencing of the facility was blocked by the community as indicated below:

R12: "Fencing of the park is a very sensitive thing here. As you can see the contractor is here and they want to start fencing the park but the community doesn't want it."

R9: *"Our premises do not have a security fence. We don't have any of those at the museum."*

4.4.4.3 Security officers

Nine participants identified that the number of security officers assigned for duty was inadequate for the facilities. Out of the nine, five participants indicated that there was a shortage of patrolling officers, especially during the night shift. The direct comments of the participants were quoted as follows:

R2: *"…only on weekends, we have a guard at the gate because hooligans are busy and we have got one or two things stolen here. It's not good publicity."*

R4: *"At night we assign two contract guards to patrol the premises. In-house guards do not work night shifts. The number of guards on patrol is not enough."*

R6: *"The number of patrolling officers is not enough because the site is quite big. We need more officers."*

R9: *"…this place is very isolated and the few employees for security are giving us an issue because during the night we can only patrol a smaller area."*

R17: *"I feel that two security officers at night aren't enough. The officers can't operate well when there are night functions."*

Four participants noted that the number of officers to man the critical points was insufficient. The shortage had an impact on the quality of security services provided as substantiated by the statements below:

R11: *"Having one security officer is not enough because, what if he has to use the toilet or he has to attend to something else?"*

R12: *"What we do have is one security guard, now and then we have three custodians at the main entrance, who usually receives the public and show them where the exhibitions are."*

R13: "When he has to go for lunch, he sends me a message. I then ask him if he has requested a general worker to stand in for him. That means the worker has to sacrifice his or her job to fill in for the guard."

R16: "We are trying to work with it, but we actually need an extra security officer by the reception, because we have no security monitoring the place, at least if they add two more during the day to make the number seven."

4.4.4.4 Access control

Two participants responded that their access control systems were not effective due to lack of approved procedures and a faulty biometric system, as supported by the quotations below:

R14: "They are not effective because we do not have some of these procedures here, we just using access control system that is not even approved."

R17: "…and the biometric system is faulty, it works sometimes but not always."

4.4.4.5 Insufficient systems and facilities

Five participants commented that security systems and facilities required an upgrade to improve efficiency and increase capacity. The participants made the following comments:

R7: "Since we are still dealing with the security upgrade process what we have now is not enough. There are still areas that we still have to cover and provide security systems."

R8 noted that some cameras were blocked by barriers that were supposed to be removed to improve the effectiveness of the CCTV cameras at the premises,

R8: "There are objects that are blocking the camera situated at the place where criminals are stealing cars. Maybe if we were to remove those objects and maybe add a few more cameras. I would also add lighting to the premises, we would reduce the incidents."

R14 shared that the electricity generators had limited capacity to meet the electricity requirements of the museum, while R17 reported that there was limited space for guards to operate from, as noted below:

R14: "Generators are available but sometimes museum employees fail to put diesel. In addition, the generator does not have the capacity to power the whole place. It does not produce enough power."

R17: "We have restricted space since we only have a guardroom that serves as a control room too."

R23 pointed out the need to improve maintenance of security systems as quoted below:

R23: "The security measures are not well-maintained by the City of Tshwane."

4.4.4.6 Alarm systems

Two participants reported that their intruder alarm systems were not working, and this was a security threat to the museums. Most of the selected museums did not have alarm systems which posed a security shortcoming.

R7: "Yes, the intruder alarms are also not working."

R23: "The intruder alarms are not working, CCTV cameras are in limited areas, and [the] security fence is not electrified."

4.4.4.7 Informal settlements

R2 shared that the number of informal settlements around the museum was a looming security risk,

R2: "We have a lot of informal settlements springing up all around us which is problematic; we don't have electrified fences..."

4.4.4.8 Budget for security measures

Seven participants reported that they were aware of the budget allocation for security measures. However, only one participant was able to give the specific values of the budget allocation,

R7: "In 2018 – 2019 we had an annual firefighting plan for R10 000 for the replacement of fire hydrants, R7 000 was allocated to CCTV installation. The security tender was R21 – 23 million and R1.1 million was planned maintenance. I think we need more budget allocation for the upgrade of the CCTV."

Two participants from museums run by city municipalities shared that their security budgets were combined with the budget of the Department of Metropolitan Police,

R14: "We have a security that is controlled by the finance department. If ever security wants money, they must write a motivation letter to the CFO. The finance department approves the funds."

R23: "There is no budget directly for security measures, but the budget is for the Tshwane Metro Police."

Two participants from museums situated in university campuses mentioned that the budget for museum security was part of the security budget for the campuses,

R21: "There is no budget that is specific for the museum security, but for entire university security. The annual cost of each security measure at the museum is not known."

R25: "The budget that we have falls under the security budget of the campus, but I cannot provide the specific annual costs."

Two other participants reported that museum security was allocated a separate budget, but the amount seemed insufficient.

R13: "We are the last priority on the municipality budget. We experience a lot of budget cuts too. If there were community museums, then maybe the community was going to provide the funding."

R19: "I think it has a separate budget, but I don't know how much the budget is valued."

Two participants commented that their museums did not have security budgets. R24 from a house museum stated that she relied on donations which are inadequate to effectively maintain the facility, as supported below:

R3: "We do not have any security budget. We operate like, you know in South Africa, the policy is money is given when something drastic happens."

R24: "I don't get any official funding. I do have a box for donations and people can make other donations, but it is very little that I am getting."

RQ3: How does the theft of artefacts negatively affect museums in South Africa?

The answers to this research question provided an understanding of the extent to which museums were affected by the theft of artefacts and art collections. Although the losses had monetary value, the losses had impact on subsequent visits and exhibitions at the museums.

4.4.5 Cost of risks to the museum

Three participants reported that the artefacts and art collections that had been stolen were never found. The real value of the artefacts and the collections was not provided. However, the value remains priceless since no price could be paid to bring them back. Four participants made the following statements:

R12: "We waited, and we were told that they found the painting in Port Elizabeth. All the paintings were found except one, which is still missing. The police never made an arrest on that."

R24: "Yes well, the items stolen are irreplaceable and it will be very difficult to find them. It feels like there is not much point in trying to investigate the case."

R24: "They were not valuable, but it is annoying when the criminals do that. These silver coated teaspoons are an essential part of the house museum."

R25: "The Chinese Vase was stolen in 2010 during the World Cup Exhibitions at the university. It was not recovered, and visitors will never have the opportunity to see it."

Another participant (R12) further shared that after the risk of theft, scheduled exhibitions were cancelled as a precautionary measure, as quoted below:

R12: "You know, people that want to exhibit art works, especially big companies that have expensive artworks, do not book us often anymore. We were approached to have exhibitions on a regular basis. That doesn't happen so often anymore because people are scared to lose their art."

Two participants reported that there was a drop in the number of visitors which also negatively affect the revenue received by the museums. Homeless people living in the park were a threat to the safety of the visitors. The view was supported by the following comments.

R12: "Visitor totals dipped; they took a knock. It has even become less now the past year with all the vagrants living in a park. I've had people telling me they stop in the parking area and see what's going on and they are not coming to the museum if it looks like that."

R21: "Over the last 12-month period the museum has lost a significant amount of income due to the cancelled visitors' tours."

Three participants indicated that they were not sure about the value of items or equipment stolen from the museums as stated below:

R21: "I am not sure of the monetary value of items stolen."

R22: "I'm not sure about the monetary value of the stolen computers. However, the museum records for the artefacts were priceless."

R23: "The monetary value of the theft and vandalism to the museum is not known."

4.4.6 Recommendations for security improvements

The participants proposed various security measures to improve the safety in the museums. Three participants suggested the need to improve the access control systems at the entry points, reducing access points and installing technology for scanning both visitors and vehicles. The participants were quoted as follows:

R2: "A high wall around with limited and restricted access points should be developed."

R14: "We need to improve our access control system, especially at the gate. We should get technology that scans the body of vehicles to check its contents. So we need to improve our access control system."

R14: "We do better with x-ray machines to scan bags and improve the effectiveness of searching visitors."

R17: "The sign-in system for driving visitors should be made electric where you just hand in your license rather than signing in all the cars because we are next to a main road. When cars are coming for a big event and having to sign-in at the gate through that lengthy process it creates traffic-congestions that may even cause accidents."

Participant 14 also recommended the use of technological devices such as metals detectors,

R14: "We should also get metal detectors that detect guns as well. At the moment visitors can easily lie about having a firearm."

Five participants suggested the need to repair the non-functioning CCTV cameras and install more CCTV cameras in some critical areas to improve surveillance.

R11: "Yes, we would like them to add cameras at the reception and the gate."

R12: "If there are sufficient funds, we would like more security guards, not just one. We would also extend the CCTV system."

R16: "If I was to address the security situation, I will start with the fixing of CCTV cameras and add more cameras to the blind spots."

R18: "CCTV cameras will be very useful especially for those working night shift, they cannot be everywhere, so for them to move to a certain point there has to be something calling them there."

R21: "The installation of CCTV cameras in the museum corridors and inside the museum."

Two participants suggested that the CCTV cameras should be continuously monitored by a security officer to ensure a timeous response to any security breach. The participants also recommended the need to increase the number of security officers and of ensuring that the fence was electrified to improve security, as supported by the comments below:

R17: "There are some CCTV cameras that don't work so I'd advise they get better working cameras and station should appoint a person to monitor them. The fence should also be electrified."

R17: "Yes, we have made that better by encouraging the event hosts to place extra guards for their functions."

R22: "CCTV cameras should cover the whole site. A security officer should be appointed to monitor the CCTV cameras. More officers should be deployed for day and night shift. Effort should be made to electrify the fence."

R23: "The number of security guards should be increased to two for both day and night. More cameras should be installed to cover the whole museum and the fence should be electrified."

Another participant (R10) emphasised the importance of an effective communication system to promote coordination of the museum security activities.

R10: "There should be effective communication throughout the security team. If one is required to do access control, it should be easy. Moreover, it should be easy to move around checking if everything is in order."

Participant 24 highlighted the need to secure financial resources to improve security and maintenance work in the museum,

R24: "We desperately need more money to improve security and other maintenance work that needs to be done on the property, but you can't force people to donate."

4.5 Conclusion

This chapter presented the research findings from the data collected using mixed methods including the checklist, secondary data from incident records and interviews responses from security managers, security officers and museum experts. The checklist was used to confirm the existence of security measures, particularly museum security plan, policy and procedures, existing safety measures. The prevalence of security risks was confirmed using museum incident records. The qualitative field data was useful for validating the functionality of the security measures.

The data about the possible risks threatening visitors and museum assets were obtained using face-to-face interviews. The transcription of data answering Research

Question 1 resulted in the identification of risks such as theft and vandalism, robbery and/or burglary, fire, flooding and other opportunistic threats.

The existing security measures analysed covered the following themes: security plans, security policies and procedures, technological and manual security measures. The effectiveness of the security measures was established by the security specialists in the different museums.

The real value of the artefacts and the collections was not provided. However, the financial value remains priceless since no amount could bring the stolen or damaged or destroyed artefacts and art collections back. Several security measures were recommended by the respondents to improve the safety in the museums, including improving access control systems at the entry points, reducing access points and installing technology for scanning both visitors and vehicles.

CHAPTER 5
ANALYSIS AND INTERPRETATION OF FINDINGS

5.1 INTRODUCTION

The discussion of the results of this study seeks to operationalise and validate the findings in the context of the Gauteng museums. The discussion also assists in identifying new knowledge about the researched phenomena based on the findings. The discussion is framed according to the data responses to the research questions. The potential risk exposure for museum visitors and museum assets was the first section, followed by the impact of different museum security measures, the shortcomings of the control measures and the last section is about ways to improve museum security. The operationalisation of the study findings answered the research aim and objectives: The proposed study is to examine the current security measures for the protection of museums in Gauteng, South Africa to develop a Security Model for Museums through the following specific objectives:

i)   To evaluate the possible risk exposure of both visitors and museum assets in museums in Gauteng, South Africa.

ii)   To discuss the impact of different types of security measures implemented by museums in Gauteng, South Africa, *vis-a-vis* shortcomings and inadequacies identified.

iii)   To determine the impact/implications/significance that stolen artefacts have for South African museums.

5.2 POSSIBLE RISK EXPOSURE OF MUSEUM VISITORS AND MUSEUM ASSETS

The museum risks identified by respondents in the previous section include theft and vandalism, fire, burglary/robbery, flooding and opportunistic threats. These risks resulted in losses of artefacts, art collections, museums assets and visitors' belongings.

5.2.1 Theft and vandalism

The *theft of museum assets* involved items such as trollies, electrical cables, drain covers, fences, video analytics, computers, laptops, household items and cutlery. The other *items stolen belonged to museum visitors*. The participants revealed that the tourists' bags and other items that were not specified were stolen. The quantitative identified data revealed the following theft figures: four (16%) in the last three years; and three (12%) in the past 5-12 years. According to the counted theft cases affecting visitors, the risk has increased in Gauteng museums. Compagna (2015: 91) confirms that if an art collection or object goes missing from the place where it is stored or exhibited, theft is the potential cause. Korsell et al (2006: 80) reported that most collections that are easy to steal and sell are items of lower value. The participants shared that criminals smashed the windows of cars that were parked outside the museums to grab any valuables that they could find. The criminals' behaviour insulates that tourists' items are expensive and when selling, one would get more money, rather than local goods. Pandya (2013: 9) observes that theft incidents in South African museums exposed the shortcomings of museum security systems. Other visitors affected by the thefts were those that hired the museum facilities and had their cars stolen from the museum grounds.

The participants reported *cases of vandalism* that involved the destruction of fibre boxes outside the museums and damages to visitors' cars during student protests. Cases of vandalism reflected in the incident records were a high risk faced by some selected museums: five (20%) in the last three years; three (12%) in last five to 12 years; and 1 (4%) case in over 12 years. The results show that the vandalism of museum assets, not art collections had an upward trajectory from over 12 years to date. Similarly, Ntiwane (2020) provides an account of the Hip Hop Museum vandalism in Johannesburg that resulted in an estimated R2.5 million damage. The vandalism secondary data findings were not supported by respondents' interview results. Benny (2013: 22) posit that museums face threats such as intentional destruction of valuable documents, vandalism, theft, burglary and arson. There was a reported case involving petrol bomb arson in one of the selected museum houses that

caused minimum damage to museum antiques. Salomon et al. (2018) concur that art vandalism is a serious museum risk in United States (US) museums or galleries. The precise reason for art vandalism could not be ascertained from the respondents. However, most museums did not experience artefact vandalism; the vandalism was committed in and around the premises affecting visitors' assets.

5.2.2 Burglary and/or robbery

The findings confirmed that the cases of *burglary or robbery* were isolated and mostly affected house museums causing trauma to the residents and damage to the property, but there were no visitors involved in the robberies. The following robbery cases were reported in the checklist and was a relatively high amount of robbery cases: three (12%) in the last 3 years; two (8%) in the last 5-12 years; and one (4%) in over 12 years. The cases were mostly reported in house museums. Respondent 9 said, *"Yes, we've had a problem where a break-in was reported at one of the cottages, but the alarm tripped off."* In two unusual circumstances, security officers were robbed on their way to work. One of the robbers was arrested and sentenced for the crime. The effect of the reported cases of break-ins was damage to property and theft of household items such as cell phones, microwave ovens and televisions. According to Compagna (2015: 92) robbers who exhibit violence when they commit crime can result in violent possession of the objects or cause harm to the victims. Participants suspected that the increased number of unauthorised settlers near the museum posed a security risk to visitors and museum residents. Some of the criminals stole cables for scrap for a fix, especially by those who use drugs, known as Nyauope. The participants (R2 & R6) who reported that there was vandalism might mean that both participants had no idea of what was happening or were hiding some information related to cable theft since the crime involves insiders.

5.2.3 Fire

Field data indicated that the *risk of fire* was reported in four museum facilities. The fire outbreak affected museum administration offices and exhibition facilities, respectively. A report by Arts Council England (2013: 2) revealed that the risk of fire is one of the greatest threats to museum assets and artefacts considering the destructive effect of

fire. The fire risk was the second least identified risk in the sampled museums with four (16.7%) cases in the past three years and no cases in the past 5-12 years. Six respondents in the interviews reported that they had fire outbreaks at their museums. Of the reported cases, only one respondent reported that the fire burnt artefacts in a museum house [R5]. NPS (2002: 9.12) indicated that fire security measures should be prioritised as part of museum facilities' safety. Most of the respondents mentioned that they were unaware of any record of fire during their employment tenure. The findings suggest that the security measures against the risk of fire are comprehensive in the national museums, municipality museums, and university museums being studied. Twenty-four (96%) museums had fire safety equipment on their premises. It appears there were quick and effective responses to fire outbreaks which explain why the fire risk caused minimum damage to museum facilities and art collections. Unlike what Tomaštík et al (2018: 4) found, the fires reported in the studied museums had less destructive effects on museum collections. The authors stated objects stolen from the Czechoslovakia Republic museums, galleries and Archives that include antiques, books and artefacts.

The *flooding risk* which resulted from a drain blockage and burst pipes were reported in two museums. In the checklists, the cases of floods were the least observed cases in Gauteng museums with only three (12%) in the past three years. The risk of floods cannot necessarily be controlled by physical security measures but can be transferred to insurance companies for cover. Tomaštík et al (2018: 1) recommends a number of steps that can be taken to lessen the impact of terrible natural disasters and the danger of harm or loss in various emergency circumstances. The Arts Council England (2013: 2) reported that water damage is probably the second most common type of damage to museum collections after fire risk. Arnoldi (2021) reported the flood damage in the Johannesburg Geological Museum's public display area and the basement storeroom, which housed most of the collection were damaged. In the other three selected museums, the floods were caused by heavy rains and resulted in structural damages. The findings confirmed that the floods did not affect exhibitions, artefacts or art collections. One of the participants reported that there was a severe flood that affected the main hall of the museum, but the artefacts were bubble wrapped

for safety [R13]. The affected museums were temporarily closed to ensure the full repairs of the premises.

Field data exposed *opportunistic threats* suffered by museums and museum visitors. There were isolated cases of harassment and mugging of museum visitors by vendors and homeless people operating near some of the museums. The homeless people living in informal settlements around the museums committed opportunistic crimes (Nyashanu et al, 2020: 1445) when they pounced on unsuspecting visitors. Museum patrolling officers in some museums worked in poor lighting that left them vulnerable to snake bites during night shifts. Motivated offenders, according to the Routine Activity Theory, will seize opportunities when they come with eligible targets that lack capable guardianship. Reyns (2017: 35) affirms that in the absence of adequate guardianship, museum crime thrives on social networks of homeless people to connect motivated offenders with potential victims. Accordingly, the occurrence of some museum crimes is best described in terms of the Routine Activity Theory where the criminals are motivated by the absence of security guardianship (Thomas & Hart, 2017: 121). Indeed, visitors become victims of opportunistic crimes as they are targeted as a resulted of limited security visibility. Hence the importance of ensuring that adequate security measures are implemented at museums to ensure the safety of the museum premises, artefacts, staff and visitors.

5.3 STOLEN ARTEFACTS, ART COLLECTIONS AND MUSEUM ASSETS

The findings about the nature of risks for artefacts and art collections were cases of the theft of artefacts and paintings in some of the selected museums. The items reported stolen on exhibitions included metal copper bars, a painting of Miriam Makeba and an antique Chinese Vase. However, no person was specifically linked to the disappearance of these items that went missing during the exhibitions. The other items stolen from a house museum included Venda beads stolen in the last five years, an 18th century waistcoat and a few items of clothing and tools. Museums that did not experience artefact theft secured most of their items in glass cubicles and some exhibitions had items that were too big to be easily stolen. According to Pérez-

Azcárate et al (2021: 155), a museum exhibition is secured in a glass cubicle that serves as a storeroom and display unit.

The research results indicated that museum risks such as burglary, theft and robbery caused the loss of museum assets and infrastructure. As a result of the risk of fire, damage was caused to museum furniture and museum structures. In other museums, participants highlighted that they recorded theft of equipment such as computers, laptops and household items. The findings showed that the majority of the cases of theft and burglaries were reported to the local police stations although the arrest success was very low and no assets, artefacts or art collections were recovered. Based on the research results, efforts should be made to institute security measures that are risk preventative, to reduce the loss of museum assets and art collections. There were cases where the perpetrators of crimes were caught on CCTV cameras, but they were never caught, and the items were never recovered. Sakib-Ahmod, Hemel and Hossain (2021: 1) contend that despite the presence of CCTV cameras, criminals could commit crimes such as robbery, snatching, and theft.

The findings reveal the need for an integrated security system that includes physical security systems and organisational factors, to successfully foster effective security measures that can detect, prevent, expose and lead to the arrest of criminals. In other cases, successful arrests were made, yet items were not recovered and there were no convictions of the criminals. Sakid et al (2021: 6) points out that some cases recorded on the CCTV cameras go "cold" and the offenders are not arrested to face justice because they escape. There were also cases that could not be reported to the police due to lack of evidence. Therefore, effective appropriate security measures are important to prevent crimes or if something happens to have evidence.

5.4 IMPACT OF THE DIFFERENT TYPES OF SECURITY MEASURES IMPLEMENTED

In answering the second research question (research objective), the field data provided an understanding of current security measures that are operational in the various selected museums in the Gauteng Province. The findings also provided an

understanding of the effectiveness of the identified security measures on museum assets, artefacts and art collections and the safety of visitors. The analysis outlined security measures commencing with the security plans, security policies and procedures, technological and manual security measures.

According to the research findings, *a security plan* was designed and implemented in some museums to reduce the vulnerabilities of museums, increase security capacity and reduce security risks. Some museums revealed that they had documented security frameworks that outlined what had to be followed by employees and visitors. Almost half of the respondents answered that their museums had no written security plans but suggested that they had occupational health and safety plans. However, observation data contrasted with that, revealing that, 80% of the sampled museums did not have security plans on display and the remaining (20%) had plans. The huge discrepancies between the qualitative and quantitative data can cast doubt on the understanding of a security plan in museums. Ambrose and Paine (2012: 317) reflect that museum directors should ensure that museum buildings are secured and that effective physical defences, security systems and procedures are in place around the clock. Respondent 12 said: *"The security plan is incorporated in the Occupational Health and Safety Plan".* For museums situated in university campuses, the security plan was a component of the university's security plan. R25 reiterated that: *"Yes, there is a security plan as part of the broader university security plan and not specifically for the museum".* Similarly, museums administered by city municipalities did not have a security plan, but used the one for the Metro Police, the responsible authority. While one respondent had mentioned that their museum had a security policy and not a security plan, very few respondents reported that their museums had no security plan at all.

The quantitative research findings depicted that 48% of the sampled museums had security policies, while 52% had no security policies. Qualitative field data confirmed that there was no *museum security policy* for many museums, yet some explained the existence of security procedures that were in place. Respondent 21 suggested that it was necessary to develop a separate security policy for the museum. The narrative of the security policies being embedded in the health and safety policies continued. For

example, R2 said: *"We have a security policy that is tied up with our health and safety policy."* The results also revealed that they used security policies that are provided by their metro police services. R7 stated: *"We do have a security policy that was developed by JMPD."* To explain the existence of a security policy, respondents explained different access procedures that include visitors' access, employees' access to offices and the security induction of new employees. Schoeman (2011: 37) states that one way to evaluate the commitment of executive management is to identify their actions towards establishing or facilitating the development of a security policy that gives direction to risk management. A total of eight respondents revealed that their museums had no security policies. R6 substantiated that "*I have not seen any written security policy. We are just verbally instructed of what we should do."* The respondents did not divulge the direct impact of lack of security policy in their museums.

The findings on the *emergency plan* showed that some museums were prepared to deal with emergencies by having an emergency plan in place. The emergency plan was essential for evacuating workers and visitors when emergencies occurred including natural disasters, fires and other related risks. The quantitative research findings confirmed that 36% of the sampled museums had emergency plans in place but the majority (64%) of the museums had none.

Despite the existence of an emergency plan, the functionality of the plan was questionable in some museums. In museums where the plans were active, employees had to undergo training and evacuation drills twice a year. R14 reiterated that: "*The plan was approved, and employees are trained and drilled on how to respond in case of emergency."* In another instance, it was reported that the emergency plan was integrated within the health and safety plan. There were also museums where emergency plans did not exist or were terminated due to inappropriate operation. These supporting observed statistics confirm that only a few museums had emergency plans. In the event of a disaster, employees and visitors would be exposed to serious dangers because of lack of information on how to respond to an emergency.

The results confirmed that few museums had *maintenance plans* that were followed when doing repairs in the museums. The field data showed that some museums relied on in-house maintenance managers, while others had external maintenance managers. A minority of the selected museums (24%) showed that they had facility maintenance plans; the remainder (76%) did not have plans. It was also established that some museums had clear maintenance procedures which also defined the access control of the workers to the museum premises. Respondent 3 said: *"When people come to the museum to fix a repair, they are supervised by a general maintenance manager."* The maintenance manager ensured that the contract workers worked during the day to minimise security risks. The qualitative and quantitative results indicated that most museums had no maintenance plans in place this implied that maintenance was conducted abruptly which could lead to security risks and other threats.

The findings confirmed that there were a few museums with *security managers* on the museum sites. Museums under the metro city authority operated under the management of the metro police. The entire group of site security manager respondents were permanent employees of the museums. The security managers had the responsibility to oversee the implementation of the security plans and policies in the museums. For the city municipality museums, the security manager's role was performed by the Metro Police Department. Other respondents mentioned that they did not have security managers in their museums. The lack of security managers could result in leadership void that cause poor strategic response to museum risks. Poor implementation of security plans would lead to high-risk exposure to visitors, artefacts and museum assets.

The practice of outsourcing the security of the facilities was balanced with internal security in other museums. Respondent 4 mentioned: *"from the private company, we are two guards and in-house they employ four guards."* The security for house museums lived in facilities around the premises. The outsourcing and in-sourcing of security was common practice in museums that were situated in university campuses and museums run by municipalities. The presence of live-in security increased security visibility contributing to risk prevention. Outsourcing security could provide an

independent security perspective to the museums from specialised officers that would provide better security.

The field data revealed that most museums had both *permanent and contract cleaners*. There was evidence to suggest that the number of cleaners was determined by the size of the museum. The results also stipulated that the house museums had no cleaners and therefore they had no standard access procedures specified for cleaners. The respondents confirmed that the access procedures used by their museums included control sheets, uniforms with tags, and visitor tags for contract workers. The quantitative data revealed that 56% of the museums had cleaner control procedures, while the remaining 44% had no specific procedures. The cleaning procedures were not on display and therefore not observed. Respondent 4 stated that cleaning staff in their museum used the biometric system of fingerprints for access control. The fact that just over half of the selected museums had cleaner control procedures implied there was a high security risk in the museums without control procedures. The fact that cleaning employees used biometric system could not be beneficial if the employees were conniving to commit crime in the museums.

The field data supported that some museum facilities *hired contractors* to conduct repairs and maintenance services within the premises. There were limited security procedures followed by contracted employees to gain access and work in museum premises. The checklist statistics confirmed that 80% of the sampled museums had no procedures for contractors and 20% had procedures in place. The low number of museums with procedures could be because most museums use permanent employees. Respondent 2 stated: "*The contractors are expected to complete a work permit, which also indemnifies our organisation against any claims from the contract workers".* A museum health and safety officer adhere to inspecting the equipment and personal protective equipment to ensure compliance. In some museums, the contract workers were escorted to the required workstations without following specific standard procedures. Access cards were generated for the visiting workers who had to use a particular entry and exit gate to access the facility. Respondent 15 substantiated that: "*Contractors are allocated a specific access gate separated from that of the visitors".* The results also suggested that contract cleaners are allocated specific zones they

had to clean, and their details are captured in the museum database for them to be easily identified. The lack of standard procedures to govern the access of contractors into museums was a risk factor that museums security officers had to prioritise. The loyalty of contract workers would aligned with their employers that could have made the museums safety compromised.

5.5 CURRENT SECURITY MEASURES

The research findings revealed that the security measures installed in different museums were classified into digital technological systems, access control and nontechnological systems (NTS). The NTS were described as the systems that have restricted operating flexibility which include security officers, security fences, lock-up gates and armed response. Hymanson (2015: 1) suggests that a corporate facility should have perimeter security system, road barriers and security patrolling.

5.5.1 Non-technological security measures

From the field data it was established that most of the museums had *fire equipment* that would be used in the event of a fire. The equipment was also serviced on an annual basis. The fire security measures identified included fire extinguishers, fire hose reels, fire hydrants, fire panels and fire control detection systems. A mere 4% of the sampled museums did not have fire equipment; the majority (96%) had fire equipment. Respondent 2 shared: *"…we've just put in some irrigation, where we can do pop-up sprayers for fires which are connected straight to the borehole".* From the observed data, 80% of the sampled museums had fire detectors, while the remaining 20% had none. There was sufficient evidence to support that the firefighting equipment in most museums was sufficient. This perhaps explains why six respondents indicated they had fires at their museums and that the damage was minimal. Few museums had fire extinguishers that were not regularly serviced. Despite R5 mentioning that the museum he works at had a fire three to five years ago, there was no fire equipment in their museum premises.

The findings revealed that *security officers* were appointed to guard and patrol most of the museum facilities both during the day and at the night. The results showed

significant variations in the numbers of security officers assigned in the different museums. The quantitative results revealed that 60% of the museums had regular patrolling officers while 40% did not have such security officers. The problem was common because the museums were short staffed. The patrols around house museums were high to prevent illegal settlements near the museum parameters. Nyashanu et al (2020: 1445) observe that informal settlements are havens for organised and opportunistic crimes that affect nearby facilities like museums. R2 reiterated that they conducted patrols: "*specifically, to protect our grounds because once the squatters put up a structure it is almost impossible to remove them".* Research evidence showed that big museums deployed more security officers compared to smaller museums. The tight security was motivated by the desire to protect the history and artefacts housed in the museums. The field data also showed that the security officers escorted visitors during their tour of museum premises. By patrolling they increase visibility which could assist in preventing or reducing crime.

The primary data supported that a *security fence* was a common physical feature of most museum premises. The museums had combinations of a wall, razor wire, spikes and electrified fences. The quantitative results confirmed that 80% of the museums had fences and the remainder had none. However, the number of neither electrified nor razor wire fences were very limited and one electrified fence was disconnected. R7 substantiated that: *"we have the wall and electric fence, but the electricity is currently not connected."* The fence was intended to facilitate the physical protection of the museums by preventing easy direct access to the premises. Ncube (2017: 47) states that fencing provides security to the premises and items contained in the premises. The availability of *lockable gates* was linked to the security fence. The findings supported that entry gates in some museums were locked-up at the end of every working day to reinforce security.

The findings confirmed that *access controls* were a common feature of most of the selected museums. Hymanson (2015: 1) suggests that access control should be implemented by authorised personnel. Two respondents pointed out that access procedures were expected to be followed by employees, visitors and students entering university museum facilities. The quantitative statistics revealed that 52% of the

museums followed clear written entry procedures for visitors and employees. The access control systems for visitors reported by most of the respondents ranged from manual to digital. The findings were consistent with Best and Nelson's (2020: 165) recommendation that the use of tight access controls, card keys and biometric systems reduce risk exposure. By having strict access control, it can also assist in preventing unauthorised access and preventing the removal of museum assets and artefacts.

The sign-in-systems were applied as a manual access control method when entering and exiting some museum premises, while others applied digital technology such as access cards. Personal details and items of visitors were recorded in the access books. Respondent 11 highlighted that: *"when visitors come, they are made to sign the visitor's book and we hand them a visitor's slip."* In a few of the other museums, when visitors made bookings, they filled in indemnity forms. The technological access control systems used included customised access cards and biometric systems. Respondent 10 shared that*: "students use access cards and fingerprint which is a double access control in case unauthorised persons in possession of student cards".* The access controls were implemented on main entry and exit points. Compagna (2015: 16) confirms that access procedures for opening and closing the museum should be clearly defined. The procedures should be properly documented and implemented to ensure tight security.

5.5.2 Digital technologies (DT) security measures

The second category of security measures was digital technologies. The respondents identified the following digital technologies: CCTV cameras, alarm systems, scanners and metal detectors. Similarly, the digital security measures identified by Singh and Margam (2018) include CCTV cameras, fire alarms and scanners as vital crime control measures in corporate premises.

The results supported that *CCTV cameras* and control monitors were installed in some premises as a security measure at specific entry points. Perkko (2006: 11) further recommends the need to set-up CCTV cameras inside and outside museum

premises. Piza et al (2020: 24) conclude that active monitoring in CCTV setups produced better results than passive systems. The installation of the CCTV system at several risk points within and outside museums could improve surveillance of criminals thereby eradicating risk threats and security breaches in museums. Findings by Piza et al (2020: 6) confirm that CCTV cameras are linked to a significant reduction in crime. The extent of concentration of the installed cameras varied from one museum to another. From the observed data, 60% of the sampled museums had CCTVs, while 40% had nothing. Similarly, Puri (2008: 1) states that a facility should have CCTVs at multiple access points to increase the level of surveillance. Piza (2018: 14) corroborates that the installation of CCTV cameras at strategic points could improve crime detection and prevention. Respondent 2 stated: "*The footage is viewed regularly to see if there was any* anything [sic] that we could pick up with regards to suspicious behaviour". Hymanson (2015) agrees that a 24/7 video surveillance is needed to derive full benefit of the system. The continual application and monitoring of the CCTV system minimises a slow response to any breach of security by criminals.

However, reports were made about the lack of CCTV maintenance and that some security officers were not knowledgeable on the operation of the cameras. The CCTV operation failure or malfunctioning increases museum risks as it weakens the effectiveness of the integrated security systems. The finding was contrary to Puri (2008: 1) who mentioned the importance of hiring competent personnel to handle video surveillance. Compagna (2015: 65) corroborates that the CCTV security system should consists of (a) recording equipment (video cameras); (b) a video recording system; (c) image displays (monitors); and (d) a data transmission system. Substantial research evidence confirming that the CCTV systems in most museums lacked complete functional components to ensure effective surveillance of criminals. The installation and operation of complete CCTV systems could yield positive safety performance in museums mitigating possible threats to employees, visitors, museum assets and art collections.

The field data confirmed that few museums were equipped with *security alarm systems*. According to Hymanson (2015: 1), alarm systems are useful security measures to detect possible intrusions by criminals. This result was like the findings

for most of the selected museums, where alarm systems were activated at 5 pm at end of day and deactivated the following day at 8 am, when the museums were opened. In addition to the shortage of alarm systems, some alarms were malfunctioning. The quantitative results showed that 72% of the museums had no security alarm systems, while 28% had installed alarms, which is similar to the qualitative results. Respondent 23 confirmed that *"There are intruder alarms that are currently not working".* The ineffective alarm systems were unable to detect any possible security breaches thereby exposing the facilities to security risk. The same respondent reported that a security breach caused the theft of museum assets in the premises. The field data showed that very few museums had *armed response* security integrated with their alarm systems when intrusions were detected. Goel, Datta and Mannan (2017: 23) allude that during the occurrence of a crime, alarm activation and the operator's response combined serve as one of the important levels of protection. When risks are detected by alarm systems, the armed response security is expected to move quickly to prevent the security breach or minimise the risk impact. The availability of armed response increased surveillance for the museums. Goel et al (2017: 24) support that the proper use of alarms notifies the operator of potential process deviations from normal for the operator to take corrective action. However, some museums' alarm systems had no service providers or reaction security that would immediately respond when the system was breached, signifying weak integration of security measures. Other confirmed shortcomings include few CCTV cameras, unelectrified fence and shortage of security guards.

According to the field data, *scanning machines* were being used in only two museums. The scanning machines were essential for detecting items that were not allowed in and out of the museums. Respondent 15 reported that: *"we use the hand scanning machine to detect any unauthorised items such as guns".* Two respondents also mentioned that security officers in their museums used *metal detectors* to restrict the entry or exit of unauthorised items. According to Liu, Li, Shu and Zhang (2018: 278) the use of an electric or bar scanner helps in detecting illegal items that may be smuggled in or out of premises or an environment. Study results confirm that the security officers had to conduct body searches to complement the metal detectors.

Museums with more security measures were less likely to become victims of crime or be exposed to risk.

5.5.3 Other security measures

There were *other security measures* found in a few museums such as *glass cubicles* to protect artefacts and art collections from damage and theft. These physical structures were kept locked using key combinations that could not be breached by intruders. Respondent 14 reported on the effectiveness of glass cubicles, by stating: *"there has been no theft of artefacts because the artefacts and art collections are secured in glass cubicles".* The use of drones to conduct area surveillances was revealed by a respondent. Respondent 2 shared that: *Our security company uses drones once a week to see if they can pick up pathways a (sic) new path patterns or activity…"* The use of drones could positively influence security results in museums because criminals are usually unsuspecting of when the drone surveillance is being conducted. Damala, Ruthven and Hornecker (2019: 1) posit that there is a lot of debate about the benefits and drawbacks of incorporating digital technology into museum settings, especially when it comes to the risks and investments in terms of time, human, and financial resources. In the study there was also mention of the adoption of partnerships with the local policing forum to fight crime, especially around house museums. The adoption of layers of security could reduce the occurrences of museum risks in museum premises.

5.6 SHORTCOMINGS OF THE CURRENT SECURITY MEASURES

From the research results, it was established that the current security measures at museums have drawbacks that impede their effectiveness. The field data revealed problems such as the CCTV cameras, security fences, security officers, access control, insufficient systems and security and access control.

The problems associated with *CCTV cameras* range from no cameras at all to too few cameras at strategic points on the museums premises, lack of real-time monitoring of cameras and poor maintenance of CCTV systems. Respondent 16 commented: *"I can say that currently the parameter cameras are not working. Inside the building, just a*

few cameras are working." The respondents raised the concern that CCTV cameras were installed in limited areas and that compromised museum security. Welsh et al (2020: 56) suggest that CCTV surveillance is linked to considerable, crime reduction when effectively applied. Field data highlighted that CCTV cameras are not always a deterrent because criminals can disguise themselves by wearing balaclavas, thus making it difficult to recognise them. According to Steinhauer (2017) in the US, vandalism was captured on surveillance cameras in disturbing footage, ultimately causing $5000 in damage to artworks and $1500 in damage to the facilities in fewer than two minutes, yet the vandals were never caught. The CCTV security problem was further exacerbated by the absence of monitors in control rooms. The lack of CCTV monitoring was reported in other museums. If the video recordings of the security cameras are only reviewed the next morning, the consequences will be negative if there had been security breaches during the night. Welsh et al (2020: 59) confirm that private security personnel who operated CCTV schemes had a greater crime prevention impact than the police or a mixture of police and security personnel operating CCTV schemes. The negative effect of malfunctioning CCTV systems can be equated to an absence of cameras. The two scenarios have no recourse if criminals were to enter the museum premises. It was also mentioned that cameras were situated in specific strategic areas only. Few CCTVs in strategic points have limited coverage of risk detection.

Although most of the selected museums had *security fences* as a physical security measure, few of them were electrified. In instances where the electricity was not connected to the fences, criminals might be psychologically influenced to think that the fence was electrified. There was a general belief among the participants that when fences or walls were electrified, criminals would rethink their decision to break through the wall or fence. Field data from three respondents confirmed that their museums, premises had no lockable gates at the main entrances. Two museums were not fenced at all. The museums with no gates and no fences had compromised physical security which regularly exposed the museum facilities to opportunity criminals who according to results were spotted before breaching the access security.

The results revealed that the *number of security officers* assigned for duty was inadequate in some museum facilities. The shortages of patrolling officers on duty posed a high risk in the museums during the night shift. Respondent 6 confirmed: "*the number of patrolling officers is not enough because the site is quite big".* There was evidence supporting that when the number of visitors increased during the weekends, the risk of theft and robbery increased. Therefore, the demand for visible security patrolling was associated with the number of visitors to the museums. Some museums that were isolated were vulnerable to criminals that meant that they required a high number of security officers for day and night duty. There were numerous reports of burglaries reported at such isolated museums. The field data also exposed that the number of security officers manning the critical points like control rooms was insufficient. The shortage of security officers to relieve officers stationed at the entrances had an impact on the quality of security services in such areas. There was a link between the shortage of security officers on duty and a lack of real-time control room monitoring of surveillance cameras.

There was also evidence suggesting that some *access control systems* were ineffective because there were no clear security policies and/or security plans to guide the processes. In some cases, security officers were not aware of the working access control procedures and in others; technological devices like biometric systems were faulty. The breach of access controls was attributed to the shortage of security staff, unclear procedures and malfunctioning digital devices.

The field data confirmed that some *security systems and facilities* were obsolete and others inadequate to meet the required security standards. This signalled the need for security upgrades to improve efficiency and increase capacity. Respondent 7 commented: "*there are still areas that we still have to cover and provide security systems."* In museums that had electricity generators to provide electricity during load shedding, the capacity was not enough to meet the needs of the entire museum facilities. This implied that the functionality of most digital devices was affected by the electricity supply. The electricity supplied by electricity generators was not sufficient to sustain the security systems in the museums. The maintenance of the overall security systems was another barrier to effective security. Lastly, the vision of some

CCTV cameras installed at critical points was impaired by objects like trees, thereby posing a risk of breach by criminals. The findings also confirmed that some intruder alarm systems were not working, and this was a security threat to the museums.

The *problem of informal settlements,* especially near house museums, was a serious looming security risk. Findings in a study by Nyashanu et al (2020: 1445) revealed that organised criminal gangs, mushrooming bars, illegal dumping, and overcrowding characterise an informal settlement. The communities are faced with high unemployment, financial woes and high levels of depression, which could trigger social problems linked to mental health and crime. Although the sprouting of informal settlements is a national problem, the immediate solution for vulnerable museums is to increase integrated security such as electrified fences, cameras and security patrols.

5.7 BUDGET FOR SECURITY

There was some evidence from the field data that the security budget was crucial to the successful implementation of security measures. A minority of the respondents acknowledged that there were security budgets allocated in the museum financial plans. There was only one respondent who gave a breakdown of values for security expenditure. A lack of knowledge, understanding and experience about financial budgets could be the reason why most respondents failed to provide detailed information about museum security budget expenditure. According to Safa et al (2016: 60), knowledge sharing, collaboration, intervention, and experience all had a substantial impact on employees' attitudes toward adherence to company information security standards. The items included in the breakdown were for firefighting, CCTV installation, security contract and planned maintenance. The museums run by the metropolitan city had no separate budget; their security budgets were combined with the Metropolitan Police Department.

Museums on university campuses had similar budget arrangements; the museum security budget was integrated with the campus security budget. The findings were supported by R25 who said: *"the budget that we have falls under the security budget*

of the campus, but I cannot provide the specific annual costs". There were also a few respondents who stated that although they had museum security budgets, the funding was insufficient. Respondent 13 mentioned: *"we experience a lot of budget cuts too".* The small museums, particularly house museums commented they had no budget allocation for security because they relied on donations for operation funding. Benny (2019) argues that while small private museums experience budget constraints, large national museums have adequate budgets to implement integrated security measures. From the findings, there is a notable link between effective museum security measures and the availability of a security budget.

5.8 IMPACT OF MUSEUM RISKS AND STOLEN MUSEUM ARTEFACTS

The field data supported that the possible reasons for artefact thefts include opportunistic criminals who take advantage of security flaws. The criminal syndicates steal objects to sell to other syndicates on the international market. The other group of opportunistic criminals stole artefacts when they realised that there was no visible security. The research findings indicated that artefacts and art collection theft resulted in a direct financial loss of items stolen and the reputation or identity of the museums. Foss (2017:34) confirms that the theft of art collections lead to the financial loss that amounts to billions of dollars. The losses had an implication on the subsequent visits to the museums and exhibitions at the museums.

Most of the reported cases of artefacts and art collection theft did not result in the recovery of the stolen items. Respondents 12 shared an incident where some items were recovered. *"We waited and we were told that they found the painting in Port Elizabeth. All the paintings were found except one, which is still missing".* There was no data provided about the specific monetary value of the artefacts and collections stolen. Although the paintings were recovered two years later, the crime highlights the high value that art thieves and smugglers place on great art (Foss, 2017:37). Even if the value of the lost items was known, the real value remains priceless since no amount could be paid to bring the artefacts and art collections back. Respondent 24 corroborated this: *"Yes well, the items stolen are irreplaceable and it will be very difficult to find them".* Whatever items were stolen, future museum visitors will never

have the opportunity to see them. The stolen, valuable art collections and artefacts are in most cases never recovered. According to Hardy (2021: 6), the loss of valuable museums artefacts could negatively affect the status of the affected museum. Another argument for the losses presented in the findings was that the theft of artefacts and art collections threatened scheduled exhibitions which led to cancellations as precautionary measures on the risk of theft. Respondent 12 stated:

"You know, people that want to exhibit art works, especially big companies that have expensive artworks, do not book us often anymore." When valuable artefacts or art collection are stolen it may influence people visiting the museum which could affect the income to the museums.

5.8.1. Museum income

The field data revealed that museums receive income from visitors through a central external office or an internal office. Museums that were under the administration of city municipalities had money paid at the central cash office. As shared by R13 who said, *''I do proper booking after visitors pay the city and bring the proof of payment."* Other museums received fees from visitors at the point of entry. Additional income was received when people hired museum facilities for parties and wedding celebrations. According to Khalil (2021: 87), self-funding through admissions and trading are significant sources of income for museums that could contribute towards sustainable museum operation. Other sources of income include government grants, lottery funding and donations. Museums holding cash at the internal office were at risk of losing that cash from criminals. The findings showed that different rates applied to visitors of different ages such as children, adults and pensioners. The entry fees were also different for local and international visitors.

5.8.2 Museum visitors

The findings revealed that there are different groups of people who visited the different museums. It was confirmed from the field data that most local visitors were school children and university students. In contrast Albayrak et al (2018: 285) found that mostly Jewish, Christian and Muslim religious tourists visit heritage sites such as Jerusalem. This goes to show that the nature of museum patronage is determined by

the heritage place and the type of collection held in the institution. The other group of visitors comprised local and international tourists. These tourists visited the museum for touring the museums to see the artefacts and art collections. The last group of museum visitors included people using the museum facilities for recreational purposes. This group of visitors were interested in hiring the museum facilities for weddings, birthday parties and picnics. One respondent mentioned that their museum was no longer receiving visitors because the artefacts had been moved to other museums.

However, research evidence supported that there was a drop in the number of visitors to the affected museums where artefacts and art collections were stolen. Respondent 12 commented: *"visitor totals dipped; they took a knock".* The subsequent effect of the decrease in the number of visitors was that the expected revenue for the museums also decreased. Respondents 12 explained that: *"over the last 12-month period the museum has lost a significant amount of income due to the cancelled visitors' tours".* The reports of thefts also impacted on the perceived safety of the visitors. Kuhar (2018: 1) asserts that the loss of valuable art collections and artefacts affect the reputation of museums and the visitors attracted to those facilities. Most tourists who include specific museums in their itinerary are lured by the unique art collections or artefacts.

5.9 PARTICIPANTS' RECOMMENDATIONS FOR SECURITY IMPROVEMENTS

The security measures pointed out the need to improve access control systems at the entry points, reducing access points and installing scanning technology. There were many incidents of security breaches reported in museums with several access points compared to those with fewer access points. The reduction of access points would limit points of focus for the security officer for monitoring patrons when moving in and out of the museum facilities. When access points are restricted, the chances of criminals sneaking through the entry points are minimised.

The introduction of a digital sign-in-system for drivers would entail the capturing of the drivers' details of the visiting drivers which would reduce traffic congestions at the

entrance. Modern technology to scan vehicles would improve security checks of vehicle contents and the flow of traffic. The introduction of x-ray machines to scan bags and visitors would improve the effectiveness of searching objects that are not permissible. Although metal detectors were available in some museums, it was also recommended as a security measure by others.

The repair and maintenance of non-functioning CCTV cameras were emphasised. More CCTV camera installations are required in critical areas to improve security surveillance in the blind spots. Increasing the number of security guards was recommended as part of integrated security. It was revealed that the availability of essential CCTV cameras in several blind spots with close monitoring at night would facilitate effective security responses for possible risks. Newman (2017: 65) posits that greater usage of less visible CCTV cameras could help to reduce crime. The participants also recommended the need to ensure that the security fences are electrified to improve preventative security.

The need for effective communication systems within the museum facilities to promote the coordination of museum security activities was suggested. The communication system would enhance timeous response to security breaches and facilitate calling for security back-up. The provision of adequate funding was perceived to be the basis of an effective museum system. Availability of financial resources would assist to improve security measures and maintenance work in the museums thereby improving the entire integrated security system.

5.10 CONCLUSION

This chapter provided the presentation of the collected data through interviews with museums managers, security officers and curators to identify the nature of the risks affecting museum operations. The field data discussed revealed that museums face the risk of losing assets, artefacts and art collections, yet some of the risks can be prevented, mitigated or eliminated by deploying effective security measures. The impact of museum losses has far-reaching implications on the very existence and statuses of the museums. The threats that are posed to museums visitors and employees as a result of the different museums risks, affect the sustainability of such

institutions. When the number of visitors to museums decreases, the expected revenue diminishes so is the quality of the services provided to future patrons.

The quantitative data collected through observations using an audit checklist helped to triangulate results from the interviews. As regards Research Question 2, security measures implemented at different museums were identified and their shortcomings were discussed. The distinct security measure categories identified include organisational measures, physical, non-technological and technological measures. The last section of the discussion provided the ways to improve the current security systems. The next chapter presents the conclusions and recommendations of the study based on the research findings.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The focus of this chapter is to present a summary of the research findings to make conclusions about whether the research objectives were achieved. Recommendations are made about ways to improve museums security to minimise the occurrence of risks that affect the effective operation of the museums. The security measures that are at the disposal of museum security management are categorised into technological and nontechnological measures. The understanding of different types of risks in museums could inform the decisions about the suitable security measures that could be implemented to mitigate the risks. A Security Management Model for museums was developed based on the results to provide a standardised museum security framework that can be adapted by museums in Gauteng, South Africa.

6.2 FINDINGS OF THE STUDY

The research findings conceptualised and validated in Chapter 4 were based on the field data collected by interviewing respondents and observations conducted using an on-site audit checklist. The deployment of the qualitative and quantitative research methods assisted in the triangulation process which affected the quality of the results. The findings of the study are summarised according to the research questions interrogated to answer the research problem.

RQ1: What are the possible risks that both visitors and museum assets are exposed to when visiting museums in Gauteng, South Africa?

The findings in Chapter 4 confirmed that museum tourists and museum assets are vulnerable to a wide range of risks. The categories of cases reported in affected museums included vandalism, theft, flooding, fire, robbery/burglary and opportunistic threats.

There were *eight cases of vandalism* involving the destruction of museums assets, and others caused damage to visitors' vehicles. Vandalism was the highest risk based on the cases observed using the audit checklist. The occurrences of vandalism were highest (in relation to theft, robbery, fire and floods), indicating five cases (20%) in the past three years, followed by three cases in the last five years (12%) and there was a single reported case in the past 12 years or more. The trend of vandalism reflected an upward trajectory in the past 12 years. The findings on vandalism did not confirm any art vandalism at museums.

The *theft* of museum assets, visitors' belongings, artefacts and art collections constituted the second highest risk reported. Museum assets stolen included personal computers, video analytic and electrical cables, while museum visitors mainly lost their cars and handbags. Museum artefacts and some antique collections were stolen from gallery exhibitions and museum displays. Based on the quantitative data, there were seven counted cases of theft, four were reported in the past three years and three were in the past five years.

Based on the results the cases of *robbery/burglary* reported were three in the past three years; two in the past five years; and one in the last 12 years. The robbery cases were mainly reported in house museums where residents were left traumatised and there were no cases that affected museum visitors. The effect of the reported cases of break-ins was damage to property and the theft of household items that included microwave-ovens and televisions.

There were four cases of *fire risk* confirmed through the observation checklist audit. The fire outbreaks were located in the museum administration offices and exhibition facilities. Of the four reported cases, there was one case where artefacts in a museum house were burnt. Most of the fires were easily terminated by the use of fire safety equipment such as fire extinguishers and hydrants

The *flooding risk* is the only risk attributed to force majeure (force of nature). In three cases participants indicated that floods were caused by heavy rains. Other flooding cases resulted from drain blockages and burst pipes. The flooding risk can be effectively managed by transferring it to insurance companies. The risk of flooding had

a very low prevalence with only three cases in the past three years. The findings confirmed that the floods did not affect exhibitions, artefacts or art collections.

There were *opportunistic threat* risks that were linked to house museums located in areas where informal settlements were emerging. In some areas, homeless people were living around the museums and committed opportunistic crimes by pouncing on unsuspecting visitors. Security guards operating in museums with poor lighting at night reported that they were vulnerable to snake bites and criminal attacks.

RQ2: What is the impact of the different types of security measures implemented to protect museums in Gauteng, South Africa?

From the findings in Section 4.3, a wide range of museum security measures to protect artefacts and art collections, museum assets and visitors' safety were confirmed. The different security measures included organisational measures, physical non-technological and physical technological security measures. The organisational security measures included designed and implemented security plans and security policies which entailed emergency plans and maintenance plans. Evidence from the qualitative and quantitative data corroborate that most museums did not have security plans (80%) and security policies (52%) in place. Other pieces of evidence revealed that some security officers lacked good understanding of the security plans and security policy documents. When asked to explain security plans and security policies they merely explained different access procedures like visitors' access, employees' access to offices and the security induction of new employees.

Emergency plans are essential for outlining the procedures followed to evacuate employees and visitors from the museum premises in the event of a natural disaster or the risk of fire. The maintenance plan provides guidelines of how, when and by whom the museum facilities and assets are repaired or maintained. Very few museum facilities had written maintenance plans that outlined the conduct of maintenance. Few museums employed site security managers to oversee the implementation of the security plans and policies in the museums, while others operated without security managers. The lack of security managers in some museums were at museums that

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used contracted security. Outsourcing of security was mixed with in-house security, especially museums in University Campuses.

The composition of cleaning staff in museums comprised *permanent and contract cleaners*. There were no standard access and operational procedures followed by cleaning employees in some museums. The use of control sheets and biometric systems was common practice in some museums using internal and contract cleaners. The findings confirmed that contractors were hired to conduct museum repairs and maintenance, yet the absence of access and operating procedures was evident. The contractors were expected to adhere to access controls at some of the museums by completing standardised work permits and were issued visitors' tags. In some instances, separate exit and entry points were allocated for contractors who were assigned work at the museum premises.

Non-technological physical security measures

Non-technological security measures identified in the study include *security fences*, lock-up gates, fire equipment and access control. A security fence was considered the first layer of security for museums, intended to prevent direct access by intruders with features such as razor wire, spikes and being electrified. The installation of lockable gates was a reinforcement to access controls. A few of the security fences were electrified, to provide added physical museum security. The issue of nonlockable gates was also reported in a few museums resulting in reduced security to museum premises. The absence of these extra security features made the premises vulnerable to criminals or intruders due to them having a weak line of defence.

The role of *physical policing* was reported in many museums to provide surveillance to the museum facilities both during the day and during the night. The results showed that some museums were understaffed in terms of the number of security officers on duty. The shortage of patrolling guards in museum facilities was a security threat. The findings revealed that the limited number of security officers posed a high risk to museums, especially at the night. During the day, when the number of museum patrons was very high, security was over-whelmed by the numbers. The risk of theft and robbery increased when the population of visitors increased, yet the number of

security guards remained unchanged. In addition, the low number of security personnel affected the real-time monitoring of CCTVs and reaction to other detective devices such as intruder alarms.

The results revealed that sufficiently installed *fire equipment* was a vital security feature in most museums. The fire equipment included fire extinguishers, fire panels, hose wheels and fire hydrants. Fire control detection systems found in some museums were part of the technological security systems.

The access controls confirmed by the findings ranged from simple manual controls to complex digital access controls. As much as the entry and exit points were genuinely used by visitors, employees and students, intruders exploited the same facilities to breach museum security. Sign-in systems were common among the manual access control used to record the movements of patrons and workers at the museum premises. Technological access controls that were used by workers and students included customised access cards and biometric systems. The research evidence suggested that the lack of clear security policies and security plans negatively impacted on access control systems. In a few cases, security personnel were unaware of the access control operating procedures, thereby exposing the system to the risk of intruders. The malfunctioning of biometric systems also compromised the effectiveness of access control systems.

Digital security technologies (DT)

The findings identified the following digital security technologies: CCTV cameras, alarm systems, access controls, fire detection control systems and scanner and metal detectors. The CCTV systems were installed and operating in museums with different features such as control monitors, cameras at strategic points inside and outside museums and video records. Some museums did not have CCTV cameras installed, while in other cases the concentration of cameras was insufficient. The CCTV knowledge of security officers were also questionable in some instances. The other concern raised by security was that CCTV can be ineffective when criminals disguise themselves by wearing balaclavas to hide their true identity. The absence of real-time monitoring of the CCTV system compromised the effectiveness of the security system.

Security alarm systems were a feature in only a few museum facilities. Alarms were reported as detection systems that could not stop intruders but could signal a quick reaction to the breach of security. There were shortages of alarm systems in crucial areas, and the problem was further exacerbated by some alarms malfunctioning. The findings reflected that some alarm systems had no independent service providers who would respond if there were security breaches.

The results confirmed that s*canning machines* were installed and fully operational in two museums. The machines were considered useful for detecting entry of unauthorised objects such as guns and unauthorised exit of museums assets. Metal detectors were also used in some museums. Visitor and employee body searches were conducted by security officers to complement the metal detectors. Other reported security features to protect artefacts included locked *glass cubicles* that are inaccessible to unauthorised persons. Partnering with local policing forums to fight crime was practiced at house museums, to enhance security.

The other challenge facing the museums was that the *security systems and facilities* lacked the capacity to provide the expected security standards. Lack of security upgrades was identified as a threat to the efficiency and effectiveness of museum security. The effect of load-shedding was a major problem affecting the quality of security. Most digital technologies were rendered ineffective when the electricity supply was interrupted. In museums using a generator, it was reported the power generated by them was unable to sustain the operation of the available digital devices. Another challenge mentioned by participants is the *problem of informal settlements* near museums, which was described as an increasing security problem.

RQ3: How does the theft of artefacts negatively affect museums in South Africa?

The research findings revealed that the possible reasons for artefact and art collection thefts could be viewed international criminal syndicates, local criminals and opportunistic criminals. Members of international syndicates steal artefacts and art collections to sell them to international buyers. Local criminals steal to satisfy their individual personal financial needs by selling the items in the local market. Lastly,

opportunistic criminals capitalise on security flaws to steal from museums and these criminals can even be visitors or museum employees. They stole artefacts when they observed that security was not sufficient.

While the theft of artefacts and art collections resulted directly in financial loss, the real losses to museums were immeasurable. However, the real monetary value of the stolen artefacts and art collection was not provided. The stolen objects were regarded as irreplaceable if they were not recovered. The biggest loss was attributed to the museum's reputation or status associated with the stolen artefacts or art collections. The loss adversely impacts the future museum patrons who want to visit the museums. The results confirmed that most of the reported cases of the theft of artefacts showed that the objects were never recovered. The reported crimes threatened the hosting of scheduled art exhibitions which had to be cancelled as a precautionary measure.

When the number of patrons visiting museums decreased, the expected income also decreases. Most museum patrons were made to pay entrance fees to a central office prior to visiting or they paid at the entry points. Different entrance fees were set for both local and international visitors. The additional income that was expected from people who hired museum facilities was also affected. Museum facilities were hired for events like parties and weddings. Therefore, a decrease in visitors was directly linked to the loss of income.

6.3 CONCLUSIONS OF THE STUDY

The museums and patrons' risk exposure in the Gauteng Province, South Africa were generic and related. According to the research findings, these risks included theft, vandalism and burglary/robbery of museum artefacts, the visitors' and museums' assets. The risks of fire and flooding threatened museum infrastructure, assets, artefacts and art collections. From the findings the risk with the highest prevalence was vandalism, followed by the theft of artefacts and visitors' belongings.

According to the findings of the current study, museums had different types of security measures that possess different strengths and weaknesses. The museums' security

measures had three main factors: organisational measures, nontechnological measures and digital technology measures. The organisational measures include a security plan, a security policy, access control procedures and security personnel. Non-technological measures include security fences, lockable gates, fire equipment and security guards. Lastly, digital technology entails CCTV systems, intruder alarm systems and armed response, x-ray machines, metal detectors and scanners. Other measures identified included glass cubicles and local policing forums.

It was established from the findings that the theft of artefacts and art collections have serious implications for the sustained operation of museums in South Africa. The implication of theft was three-pronged: financial loss, museum status and patronage to the museums. Most artefacts and art collections have insurable value, and when they are stolen or vandalised, the museum suffers a direct financial loss. Museums are named after their artefacts, objects or themes in their custody. Therefore, any losses of artefacts or collections without recovery could result in the depletion of the value of the museums' reputation or identity and loss of cultural heritage. Lastly, no museum patrons would visit museums that are known to be unsafe as that would endanger their lives. From the museums' perspective, a decline in the numbers would translate to a loss of revenue.

6.4 RECOMMENDATIONS OF THE STUDY

The recommended improvements for the current study include limiting entry and exit points, improving access to digital technologies, improving repairs and maintenance of technological equipment, fostering effective communication of security policies and plans and allocation of adequate resources for the deployment of security strategies. A strong security framework should foster the implementation of a physical protection systems that entails the functions of delaying risks, detection and response to risks.

6.4.1 Improvement of access controls

The qualities of access control have a bearing on the first layer of security that prevents the entry of criminals in museum on to premises. The elimination of security breaches at entry points can guarantee security within the museums. One of the ways of tightening access controls is the reduction or limitation of entry or exit points to

promote concentrated surveillance at these points. The risk of criminals sneaking through unmanned or poorly manned points is mitigated. It would be best to limit access points to a maximum of two points. The improvement of access control should also include drive-in visitors by introducing a digital sign-in system. The systems can electronically capture the personal details of the drivers and reduce potential traffic congestion at the entrance. Digital technology can be installed to conduct vehicle scanning at reduced turnaround time and a higher quality of vehicle checks for unauthorised items at entry points. X-ray machines can be used for scanning visitors' bags to detect impermissible objects being brought into the museum's premises and artefacts from being taken from the museums.

6.4.2 Repairs and maintenance

The findings revealed that there were CCTV cameras installed at strategic points, but they were not functional. Regular and scheduled repairs and maintenance of digital technology such as CCTV cameras would assist in promoting the sustained operation of the security devices. The decision to increase the number of cameras in blind spots would be vital in improving the effectiveness of the detective devices in providing museum security. The modification of security measures such as electrifying perimeters would increase the preventive strength of museums' physical security and imposed the first line of defence.

6.4.3 Information and communication system

The successful coordination of security employees on duty depends on effective communication. Security officers should be equipped with communication devices that would allow immediate response to the security breaches in the museum's facilities. When the communication system is reliable, security personnel can call for back-up should they be overwhelmed by a threat on the grounds.

### 6.4.4. Adequate resources for the deployment of security strategies

Financial resources are the fundamental requirement for the successful implementation of security measures in museums. The procurement of relevant digital technology is possible when financial resources are adequate. The execution of repairs and maintenance plan thrives on the availability of sufficient budget allocation for the services. The provision of employee training and development programmes

can be successfully implemented when a budget for training is allocated. The failure or ineffectiveness of the security systems was as result of the incompetency of the security personnel to interpret and execute security policies and procedures.

6.4.5 Security Model for Museums (SMM)

The recommended security framework should be comprehensive and have multiple interdependent layers of security systems such as security officers, multiples barriers, CCTV surveillance, access control and intrusion detection system. The researcher developed the following Security Model for Museums to ensure the effective protection of museum facilities. The elements of the model include risk governance, risk response measures and integrated security systems.

Figure 2: Security Model for Museums
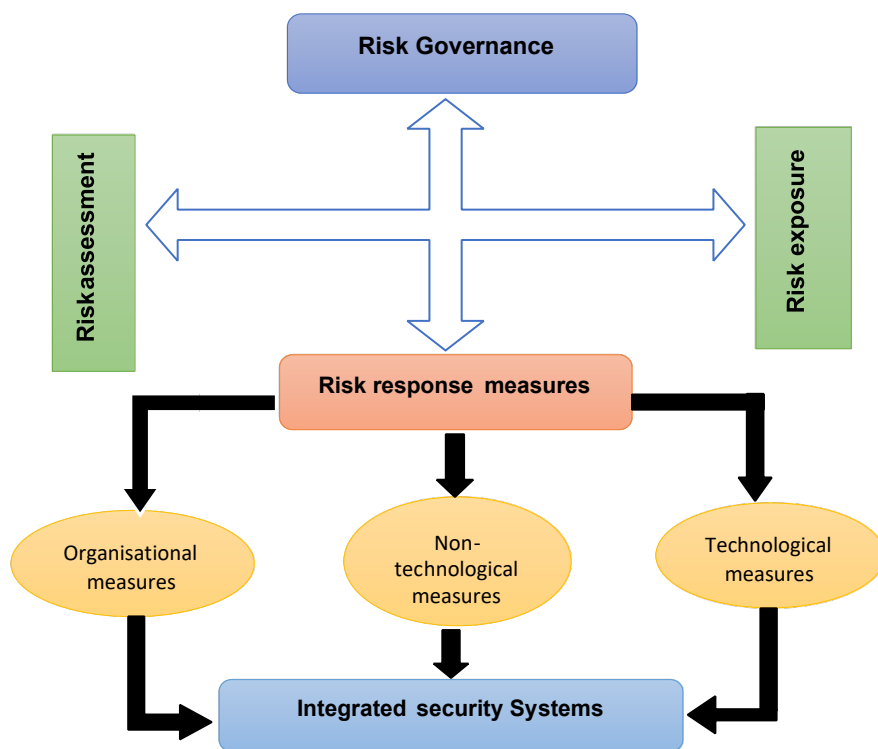
Risk Governance

The Security Model for Museums starts with risk governance. The South African Institute of Chartered Accountants (SAICA) Student Handbook 2016/2017stated that: a structure should be established at the senior management level to oversee the risk governance (SAICA, 2016: 61) of each museum. The responsible team should establish a culture of risk awareness and risk alertness. The composition of the team

should be inclusive of cross-functional specialists such as IT, finance, human resources, and security. The size and composition of the risk management team should be dependent on the size and needs of the museums.

A sustainable financial budget should be allocated to facilitate the provision of security infrastructures and digital technological requirements. Security personnel training and development and repairs and maintenance should be well-funded. The team should promote the recruitment of suitable security personnel and recommend continuous training to meet the dynamic security needs by deploying innovative security measures. As part of risk governance, risk assessments and risk exposure should be implemented and determined.

Risk assessment – should be facilitated by the risk governance team using security surveys to identify the nature and types of risks affecting the museums. The types of security measures should be informed by the risks identified. *Risk exposure* – should involve the profiling of the risks identified by ranking them according to levels of high, moderate and low risks. The areas and stakeholders that are critical and vulnerable should be identified to ensure that the response is appropriate.

Risk response measures

This is the response to risk exposure after a risk analysis. The security measures should be three dimensional, namely *organisational measures, non-technological measures and digital technology.* Organisational measures involve developing security plans, policies and operating procedures that cover access controls, emergency and evacuation plans while considering the security personnel requirements. *Non-technological measures* are also known as construction measures such as the quality of building materials and, building features like doors and windows, security fences and gates. The last component of security involves digital technology which includes CCTV system, intruder alarm system, electronic access controls, x-ray machines and human detectors. Ideally, museums should implement measures based on the three dimensions mentioned.

Integrated security system

The ultimate security systems that should be operational in museums should be integrated security systems. The security systems benefit from the strengths of the different security measures in the three categories discussed. There should be a correct balance of preventive measures, detective measures and real-time security responses to any breach of security in museums. The intensity of integrated security systems should be determined by the needs of individual museums. Security measures may require customisation and the approach of one-size-fits-all in security should be avoided.

6.5 DIRECTION OF FUTURE RESEARCH STUDIES

The findings of the current study provided a better understanding of the museum security risks and the current security measures designed and implemented in different museums in South Africa. Based on the findings of the current study and the literature review, researchable gaps were recommended for further future research as proposed below:

- Replicating similar studies on security measures in museums situated in other South African provinces.
- Evaluating the impact of integrated security systems on risk management in museum facilities in the Gauteng Province, South Africa.
- The effect of leadership style on museum security to promote effective museum safety.
- Investigating information security measures implemented in South African museums to ensure information safety.

6.6 CONCLUSION

The current chapter presented a summary of the research findings focusing on the risks that were prevalent in South African museums, the existing museum security measures and the impact of risks on museums. It was concluded from the findings that museums in the Gauteng Province, South Africa experienced risks such as vandalism, theft, burglary/robbery, damage to museum assets and artefacts due to the risk of floods and fires. There were three main categories of security measures

identified in the museums, namely, organisational measures, physical nontechnological measures, and digital technological measures. Although most museums had security measures in place, the functionality and adequacy of most of the security systems rendered them ineffective. In a worst-case scenario, museums' losses due to the occurrences of risks can threaten the very existence of the museums. The losses of artefacts and art collections destroyed the distinct identities of the museums which affected the patronage by local and international tourists. Consequently, the reduction in the number of visitors affected the revenue collection by the museums.

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APPENDICES

Appendix A: Letter of ethical clearance

UNISA university of south africa

UNISA CLAW ETHICS REVIEW COMMITTEE

Date 20181024

Reference: ST97 of 2018
Applicant: TR Hafani

Dear Mr Hafani

Decision: ETHICS APPROVAL
FROM 24 OCTOBER 2018
TO 23 OCTOBER 2021

Researcher(s): Thambeleni Richard Hafani

Supervisor(s): Prof AdV Minnaar

An examination of security measures for the protection of museums
in South Africa

Qualification: MTech (Security Management)

Thank you for the application for research ethics clearance by the Unisa CLAW Ethics Review
Committee for the above mentioned research. Ethics approval is granted for 3 years.

The **low risk application** was reviewed by the CLAW Ethics Review Committee on 24
October 2018 in compliance with the Unisa Policy on Research Ethics and the Standard
Operating Procedure on Research Ethics Risk Assessment. The decision was ratified by the
committee.

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the values and
   principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is
   relevant to the ethicality of the study should be communicated in writing to the
   CLAW Committee.
3. The researcher will conduct the study according to the methods and procedures set
   out in the approved application.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone +27 12 429 3111 Facsimile +27 12 429 4150
www.unisa.ac.za

4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.

6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.

7. No field work activities may continue after the expiry date of 23 October 2021. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:
The reference number ST97 of 2018 should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,

PROF N MOLLEMA

Chair of CLAW ERC

E-mail: mollen@unisa.ac.za

Tel: (012) 429-8384

PROF CI TSHOOSE

Executive Dean: CLAW

E-mail: tshooci@unisa.ac.za

Tel: (012) 429-2005

Appendix B: Schedule of Interview Questions

The interview guide comprises of two main sections covering the following
constructs: i) Museum risks
ii) Security measures

Museum risks

1) Can you identify and list in order of level of risk the most prevalent risks that affect visitors to this museum?

2) Can you elaborate on the prevalence of each of the identified risk incidents?

3) What is the extent of the cost(s) of these risks to the museum?
   - i.   Past three years
   - ii.   Over the last 5-12 years
   - iii. Beyond 12 years

4) Can you describe the nature of the risks that artefacts and art collections are exposed to in museums in South Africa?

5) Has this museum suffered any losses due to these identified risks in the:
   - i. Past three years
   - ii. Last 5-12 years
   - iii. Beyond 12 years

6) If yes, what kinds of losses were experienced by this museum?
   - i.   Past three years
   - ii.   Last 5-12 years
   - iii. Beyond 12 years

7) Can you place a monetary value on these losses?

8) Do you know who (perpetrators) caused these losses?

9) Were any of the losses (if theft of art/artefacts) ever recovered?

10) Were any of the perpetrators arrested?

11) If arrested prosecuted, convicted and sentenced? (if case(s) still pending indicate such)

12) In your view what was the reason(s) for any of these losses?

Security measures

1) Is there a Security Plan for this museum?

2) Is there a written policy document for Museum security at this museum?

3) If yes, does it include operational instructions on procedures?

4) Are there any security measures in place at this museum?

5) If yes, please outline each?

6) In your view what is the effectiveness of each?

7) Would you consider the current security measures at this museum as adequate?

8) In your view what are the current shortcomings/problems of each security measure at this museum?

9) Does this museum have a separate budget for security measures?

10) What are the approximate annual costs of each security measure at this museum?

11) What improvements would you recommend to the existing security measures at this museum?

12) Are there any additional security measures you would like to see implemented at this museum?

Appendix C: Security Measures Audit Checklist

	Tick or cross depending on availability of the item	Y/N	Comment
1	Security Plan for the Museum		
2	Written policy document for Museum security		
3	Operational instructions on procedures		
4	Any security measures in place at this museum		
5	Access controls in place for all external entry points		
6	Controlled access procedures in place for cleaning crews		
7	Controlled access procedures in place for contractors		
8	Controlled access procedures in place for maintenance personnel		
9	Unfettered access to the office when no one is there		
10	Strategically installed CCTV cameras installed in all critical areas		
11	Visible policing or guarding		
12	Security fencing or Dura walling		
13	Escorting of visiting in the facility		
14	Guards at every entry point to the facility		
15	Glass-break technology strategically installed within the premises		
16	Regular facility maintenance plan		
17	Electrical and communications stations locked and monitored for breach		
18	Fire control detection systems in a secured area		
19	Fire extinguishers visible and secure		
20	Emergency exist plan clear and available		
21	Vandalism to facility in the last 3 years		
22	Vandalism to facility in the last 5-12 years		
23	Vandalism to facility beyond twelve years		
24	Theft of art paintings in the last 3 years		
25	Theft of art paintings in the last 5-12 years		
26	Theft of art paintings beyond twelve years		
27	Robbing of visitors in the last 3 years		
28	Robbing of visitors in the last 5-12 years		
29	Robbing of visitors beyond twelve years		
30	Fire outbreak in the last 3 years		
31	Fire outbreak in the last 5-12 years		
32	Fire outbreak beyond twelve years		
33	Floods and leakages in the last 3 years		
34	Floods and leakages in the last 5-12 years		

35	Floods and leakages beyond twelve years		

Appendix D: Certificate of editing

Certificate of Editing

This is to certify that the manuscript

AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN GAUTENG SOUTH AFRICA

By

Thambeleni Richard Hafani

Has been edited for English language usage

Lorinda Gerber
26th January 2022

+27 82 904 4033

loredit.ele80@gmail.com

Professional
EDITORS
Guild

Copy-Editing

Appendix E: Informed consent letter to conduct interviews

INFORMED CONSENT FOR QUALITATIVE DATA COLLECTION

Researcher: **T.R Hafani**
Department of Criminology & Security Science
Cell: 076 360 3685
Email : 37279807@mylife.unisa.ac.za

Supervisor: **Prof AdeV Minnaar**
Department of Criminology & Security Science
Telephone: 012 433 9530/ Cell: 083 8949485
Email: aminnaar@unisa.ac.za

Dear Research Respondent,

RESEARCH PROJECT: AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN GAUTENG, SOUTH AFRICA

Thank you for your involvement in this research study. Please see the attached research proposal for more information regarding the study. It is deemed ethical practice to obtain informed consent from a research respondent prior to the commencement of a research imitative. Informed consent involves the following:

1. **Purpose of the study.** The present study is being undertaken in partial fulfilment of a Master in Technology in Security Management in the Department of Criminology & Security Science in the School of Criminal Justice of the College of Law at the University of South Africa. The aim of the proposed study is to examine the current security measures for the protection of museums in South Africa to develop a security management model.

The following specific objectives have been formulated to address the aim of this research:

- To evaluate the possible risk exposure of both visitors and museum assets in museums in Gauteng, South Africa.

- To discuss the impact of different types of security measures implemented by museums in Gauteng, South Africa, vis a vis shortcomings and inadequacies identified.
- To determine the impact/implications/significance that stolen artefacts have for South African museums.
- To develop a Museum Security Model to ensure effective protection of museum facilities.

2. **Procedures.** In-depth interviews will be used in order to gain valuable information from the participants. The interview will serve as a means to gain insight, information from the participants' in terms of their respective fields of expertise. The interview will take at most 60 minutes and will be held at the participant's convenience. The interview will be voice recorded (with the participant's permission) and notes will be written during the interview.

3. **Risks and discomfort.** There are no predetermined risks accompanying this study. The research participant is merely providing the researcher with information about the subject matter.

4. **Benefits.** There are no perceptible benefits or incentives available for the respondents of this study. However, it can be proposed that the research participant will benefit in some way through the process of knowledge production.

5. **Respondent's rights.** Respondents are at liberty to withdraw from the study at any stage of the research provided a courtesy notification of withdrawal is sent to the researcher or during the actual interview as well. No negative repercussions will be enacted on the respondent, since participation is voluntary, and all data received from the respondent will be taken as void.

6. **Confidentiality.** All information will be regarded as personal and confidential. The researcher will not disclose any respondents' names or contact details unless permission to do so is first obtained.

7. **Data storage and dissemination of findings.** The information received from any respondent/interviewee will be stored (password protected) by the researcher. The findings of the research will be documented in the form of an academic dissertation.

8. **Ethical considerations.** The study was ethically constructed and approved by UNISA's Ethical Committee.

9. **Questions and concerns.** The researcher welcomes any questions or concerns regarding the research study.

If in agreement with the above to voluntarily participate in the abovementioned research study, please provide your initials and surname below:

I understand my rights as a research respondent/interviewee and voluntarily give my consent to participate.	
Research respondent:	**Date:**
Signed:	
Researcher: Mr Thambeleni R. Hafani **UNISA** **Student No.** 37279807	**Date:**
Signed:	

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392, Unisa, 0003, South Africa
www.unisa.ac.za/law

Appendix F: Permission to conduct research in museums in Gauteng

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_____
_____

Dear _____

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH FOR AN MTECH DISSERTATION

RESEARCH PROJECT: *AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN GAUTENG SOUTH AFRICA*

Please allow access to the below mentioned student into your entities for the purpose of conducting a Research for his MTECH dissertation.

Mr **Thambeleni Richard Hafani**, (UNISA Student No. 37279807), is currently a Masters student at the in the Department of Criminology & Security Science, School of Criminal Justice, in the College of Law, University of South Africa (UNISA), and busy with his research studies for a Masters' degree (MTech in Security Management). The title of his research topic is:

An examination of security measures for the protection of museums in South Africa

Prof Anthony Minnaar (Research Professor in Criminal Justice Studies) and *Mrs Leandri Van Schalkwyk*, in the Department of Criminology & Security Science at UNISA) are his appointed study supervisor and co-supervisor respectively.

Mr Hafani has obtained ethical clearance from the UNISA College of Law Research Ethics Review Committee (#ref: ST97/2018) to proceed with his fieldwork research (see attached letter dated: 30 October 2018).

Accordingly, we would like to request permission for him to undertake fieldwork research and conduct interviews with the staff members of the selected museum research site in Gauteng.

THE PURPOSE AND OBJECTIVES OF THE STUDY*
The primary aim of this study is: to examine the current security measures for the protection of museums in South Africa to develop a customised security risk management model for museums.

The following specific objectives have been formulated to address the aim of this research:

- To evaluate the possible risk exposure of both visitors and museum assets in museums in Gauteng, South Africa.
- To discuss the impact of different types of security measures implemented by museums in Gauteng, South Africa, *vis-a-vis* shortcomings and inadequacies identified.
- To determine the impact/implications/significance that stolen artefacts have for South African museums.
- To develop a Museum Security Risk Management Model to ensure the effective protection of museum facilities.

_____

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PRIMARY RESEARCH QUESTION
Which security measures are currently being implemented to protect museums in South Africa? [*for more detail of the research study please see the full Research Proposal attached for your further information and perusal]

HAS THE STUDY RECEIVED ETHICS APPROVAL?
This study has received written approval from the Research Ethics Review Committee of the College of Law at the University of South Africa. (See letter: UNISA CLaw Ethics Committee (dated 30/10/2018: ST: 97/2018).

INTERVIEW PROCEDURES
Museum and security staff participation in this research study will be via a one-on-one semi structured interview based on a standardised schedule of interview questions administered by the researcher to you as a participant interviewee in order to gain valuable information from you and to find out more about your perceptions and experiences regarding the protecting and securing of museums in Gauteng.

The interview will further serve as a means to gain insight and in-depth detailed information from all participants in terms of their respective field of expertise. The

interview should not last longer +45 minutes and will be held at a time and venue according to the participant's convenience. The interview will be voice recorded (with the participant's permission) and notes will be written during the interview.

Participation in any interview will be via informed consent (a participant information document and an informed consent form, which, if participant interviewee agrees0 to voluntarily participate, must then be perused and signed.

CONFIDENTIALITY OF COLLECTED RESEARCH INFORMATION

All the information that is received from the participant interviewees will be treated with the utmost confidentially (i.e. respondents will remain anonymous and no reference will be made to their identity or to the organisation for which they work). Neither organisation nor names of individual respondents/participants will be used in the resulting research report (i.e. identities will remain unknown and protected).

Participation in the research interviews will also be on a voluntary basis (informed consent). The final dissertation (research report) once accepted will be placed in the UNISA library and therefore in the public domain and can be accessed by interested parties.

Attached for your information, is a detailed research proposal and a draft set of interview questions.

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If any confirmation or other information is needed, Mr Hafani can be contacted on cell: 076 360 3685 or (student) email: 37279807@mylife.unisa.ac.za / (work) email: Rhafani@csir.co.za. Alternatively, Prof Minnaar or Mrs Van Schalkwyk, Mr Hafani's study supervisor and co-supervisor respectively, can also be directly contacted (see below for contact details).

Once permission is granted to Mr Hafani to commence his field research with staff members of the selected museums, please inform him accordingly. Mr Hafani will then be in touch directly with you or a representative of your organisation/company for the scheduling of any interviews with the relevant persons at organisation/company.

Regards

(Prof) AdeV Minnaar   L van Schalkwyk

Postgraduate Supervisor /Co-supervisor
Email: anthony.minnaar@gmail.com   vjaarl@unisa.ac.za
Cell: 083 8949485   072 595 3366
Department of Criminology & Security Science
School of Criminal Justice, College of Law
University of South Africa

Appendix G: Email from Department of Sport, Arts and Culture

076 360 3685

>>> Thembi Malao <ThembiM@dac.gov.za> 2019/07/25 20:58 >>>
[The e-mail server of the sender failed SPF checks and maybe malicious (SPF Re
cord)]
Dear CEOs

The department has been requested by UNISA to grant permission to Mr Richard Hafani, who is currently conducting his Master degree on security in heritage institutions to access the Museums in Gauteng for the purpose of conducting research. I am therefore requesting that you allow him to visit your respective institutions, I do understand you busy schedule hence I am submitting the documents through email. I have attached his research proposal together with his clearance certificate from the University for your comfort. I hope his visit to your entities will also assist you in planning for upgrading your security.

Regards

Thembi Malao
Director: Entities Management
T: 012 441 3542
M: 082 680 6688
E: Thembim@dac.gov.za
W: www.dac.gov.za

file:///C:/Users/RHafani/AppData/Local/Temp/XPgrpwise/5D84D734EAST1POBOX11...   20 Sep 2019

Appendix H: Turnitin digital receipt
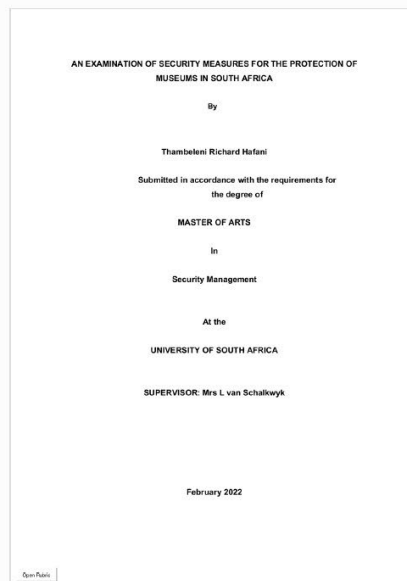

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AN EXAMINATION OF SECURITY MEASURES FOR THE PROTECTION OF MUSEUMS IN SOUTH AFRICA

By

Thambeleni Richard Hafani

Submitted in accordance with the requirements for the degree of

MASTER OF ARTS

In

Security Management

At the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Mrs L van Schalkwyk

February 2022