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How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

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by

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Abstract

The uncertainty of lack of policing involvement increases the worries and concerns and lack of trust of the potential virtual residents of Dubai Virtual Commercial City. The purpose of this research is to mitigate and minimize virtual crimes and expand safety and security in the virtual world. Using various future foresight tools to bring new solutions and recommendations to support law enforcement to ensure proactive policing in the virtual world. The results of the study show a clear correlation between the lack of rules and regulations and new emerging virtual crimes. Moreover, it also showcases the recent international effort by different countries to regulate cryptocurrency and minimize virtual crimes. The study also covers the organizational structure of Dubai Police and efforts to encourage and support international cooperation to reduce virtual crimes. This study also definitively answers the uncertainty of the lack of policing in the virtual world, shows the loopholes, and gives some strategic recommendations. Further studies are needed to establish the integrational process of law enforcement in the Dubai Virtual Commercial City.

Keywords: Virtual Crimes, Policing, Metaverse, Virtual World, Virtual Commerce, Blockchain, Dubai Police, Cryptocurrency & Fraud.

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Chapter 1 - Introduction

1. 1 Introduction

1. 1.1 Statement of the Problem

The Dubai Commercial Virtual City has the potential to be the first virtual city to offer entrepreneurs the opportunity to expand their business virtually and connect with customers all over the world. However, virtual commerce cities are a new concept, and it comes with numerous challenges and opportunities for Law Enforcement entities to keep them safe and secure. The potential of Dubai VCC evolves and grows, the more urgency and pressure on Dubai Police to act proactively. Despite the ambitions and goals of the Dubai VCC, there is a lack of governmental experience in the Virtual Commercial World and how it will affect or re-shift the policing sector, especially with the rapidly changing landscape, which requires them to adapt to resolve and investigate virtual conflicts and crimes which includes cross-borders offensive and wide range of stakeholders involved.

The problem of Dubai VCC's potential expansion and capabilities is going to transform how we conduct our business. Therefore, there is a necessity for a deeper understanding of the opportunities and threats, as well as their implications for the future of policing.

This thesis seeks to resolve this knowledge deficit by investigating the future of Dubai VCC and its impact on the policing industry and through a comprehensive analysis of the challenges and opportunities presented by the virtual city, acknowledging the uncertainties and the potential virtual crimes. This thesis will shed light on the future of policing and give solutions and recommendations.

1. 1.2 Project Goals

This thesis explores what the future may contain and how it will transform the policing sector. The new varieties of virtual crime that could occur and the difficulties of investigating virtual cross-border crimes and most importantly, how law enforcement agencies will need to adjust to the changes of the virtual city and to examine the potential implications for online policing and the control of cybercrime. The research will also look at the necessary changes to the organizational structure of the Dubai Police that may be required to effectively police Dubai Virtual Commercial City.

Some of the questions to be addressed are: How will the Dubai police need to adapt their organizational structure and operations to effectively police the Dubai Virtual Commercial City in the future? How will regulations and policies need to evolve to effectively police virtual commercial cities, and what challenges will this pose to the Dubai police? How will crimes be dealt with in the virtual world and what challenges will this pose to the Dubai police?

The ultimate goal of this research paper is to provide recommendations and insights that can inform the development of a new approach to policing in the virtual world and how to adapt to these new challenges and discuss the importance of international cooperation and collaboration in addressing cybercrime in the virtual world and provide insights into the role of the Dubai Virtual Commercial City in shaping the future of virtual policing and cybercrime control.

1. 1.3 Background information

The vision of Dubai Virtual Commercial City is a world with blurry borders and commerce and trade with no physical boundaries. A virtual space that birth hope once again and is seen as the new and modern land of opportunity. However, the land of opportunity can come with high prices and challenges for the residents and government. Law enforcement agencies have to collectively rethink their strategy to ensure the safety and security of the citizens and develop and answer crucial concerns about the policing future in the virtual world.

Dubai Virtual Commercial City is directly and indirectly linked to other governmental strategies, as shown by The Official Portal of the UAE government (n.d.), such as Smart Dubai Strategy 2021, which aims to create a smart ecosystem to empower Dubai to be the smartest and most technologically advanced city in the world with three main goals which are customer satisfaction, economic growth, and resource and infrastructure resilience.

Dubai Virtual Commercial City, with its initiatives and goals, will contribute to the legacy of this strategy as it is a platform that will attract more business opportunities and investors; various innovative products, services, and other resources will be available for customers and the virtual city is built to create strong, resilient, economic infrastructure for Dubai. Dubai Virtual Commercial City is also connected with the Dubai Blockchain Strategy, which aims to make Dubai the first city powered by blockchain technology. This goes hand in hand with the Dubai VCC's ambition and goals as it will contribute to the implementation of creating a more secure, monitored, and effective virtual digital economy. Moreover, it is also connected to Dubai Future Agenda and Dubai Economic Agenda (D33), as mentioned previously, as it aims to double the market size and Dubai Economy by 2033 with the usage of innovation and technology, Dubai VCC will contribute to the Dubai Economic Agenda by opening various opportunities for digital business and services. Dubai Virtual Commercial City is also linked to the UAE's Strategy for Artificial Intelligence as the strategy outlines the UAE government's plans to enhance the country's AI capabilities, adapt new AI-based businesses and services, and encourage the use of AI across various sectors, including healthcare, transportation, and Finance, freelancing and more. All these services can be accommodated and operated through Dubai VCC. Dubai VCC is also linked to UAE Fourth Industrial Revolution (4IR) strategy in various ways. The strategy includes the integration of advanced technologies such as Artificial Intelligence, the Internet of Things, 5G network, Biometric Security, Data Analysis, Blockchain software, and many other technologies to change and positively impact our lives potentially. It aims to position the UAE as a leading country in technological transformation. This strategy and tools are implemented and matured well, it will enhance the virtual residents' experience in Dubai VCC, and it will create a technological revolution characterized by the integration of advanced technologies, such as artificial intelligence (AI), the Internet of Things (IoT), and 5G networks, into various industries and sectors. The 4IR has the potential to change the way we live dramatically, work, and interact

with each other, and the UAE is positioning itself as a leader in this technological transformation. The 4IR strategy aims to transform the UAE into a smart, sustainable, and interconnected society where technology is used to enhance the quality of Life and create a supportive and secure ecosystem for the emergence of the virtual economy.

1. 1.4 Aims and Objectives

The purpose of this thesis is to investigate and evaluate the prospective impact of the Dubai Virtual Commercial City on the police industry. The main objective of this study is to thoroughly examine the difficulties and opportunities brought about by the virtual city, evaluate the effect on law enforcement, and propose approaches, suggestions, and solutions to effectively deal with virtual crimes and ensure the security of the virtual environment.

The thesis aims to provide insights that can help policymakers, law enforcement organisations, and stakeholders in shaping the future of virtual policing and creating a safe and prosperous virtual community. It does this through a multidimensional approach that aims to contribute to a deeper understanding of the evolving dynamics between virtual commerce and policing.

Chapter 2 – Literature Review

2. 1. Introduction

A world with blurry borders and commerce and trade with no physical boundaries is the vision of Dubai Virtual Commercial City. A virtual space that birth hope once again and is seen as the new and modern land of opportunity. However, the land of opportunity can come with expensive prices and challenges for both the residents and the government. Law enforcement agencies have to collectively rethink their strategy in order to

ensure safety and security of the citizens and develop and answer crucial concerns to the policing future in the virtual world.

2. 1.1 Overview of the Dubai Virtual Commercial City

Dubai Virtual Commercial City was first mentioned in The Fifty Years Charter (2019), written by the Executive Council of Sheikh Mohammed Bin Rashid Al Maktoum, The Vice President and the Prime Minister of the UAE, the ruler of Dubai. In article three, "First Virtual Commercial City." The charter entails Dubai taking the lead in creating the first virtual commercial city in the area that issues commercial permits without requiring residents to reside in Dubai. This goal was intended for the virtual city to have more than 100,000 businesses. According to the UAE Government (2023), Dubai Economy, alongside other governmental entities, launched the Dubai Virtual Commercial City program (VCC) in order to provide a business ecosystem for entrepreneurs worldwide and attract entrepreneurial talents with various services available to access after the applying for Virtual Company License, business registration, and authorization process through DubaiStore.com platform. The services provided make it easier for business owners and freelancers to balance the financial and administrative burdens by minimizing startup expenses and administrative constraints. The Virtual Commercial City grants endless possibilities to access the digital markets, clients, and investment and allows participation in the virtual company's dictionary. These global residents can enjoy boundless investment and commercial opportunities. The Dubai Virtual Commercial City initiative aims to provide a virtual communication and networking platform for businesses. With the ultimate goal of promoting a more competitive and dynamic business climate in Dubai, the virtual city is designed to provide businesses with a secure and efficient operating environment.

The insight is to set the stage for exploring the intersection of virtual commerce, technology, policing, and regulatory efforts.

2. 1.2 Dubai Virtual Commercial City as part of Dubai Economic Agenda

This goes hand-in-hand with the launch of Dubai Economic Agenda "D33" which includes 100 futuristic transformational projects within the next ten years to double the scope and the size of Dubai's Economy and position Dubai as one of the top 3 economic cities in the world. The Agenda includes initiatives to skyrocket foreign trade, foreign direct investment, government expenditure, private sector investment, domestic demand for goods and services, and digital transformation. According to the Government of Dubai Media Office (2023), Sheikh Mohammed emphasizes the importance of setting priorities for the next decade, which includes leading to a prosperous economy and attaining self-sufficiency in a variety of critical areas and industries, including manufacturing, by increasing the value contributed of the industrial sector and boosting export growth. Other important goals include making Dubai one of the world's top five logistical hubs and one of the top four financial centers. The Agenda also aims to boost Dubai's economic output by 50 percent via innovation and advanced digital solutions. This enforces the importance of establishing a virtual policing strategy to govern the virtual world.

2. 1.3 Dubai Economy & Tourism Strategic Plan

Dubai Virtual Commercial City was also featured in the Dubai Economy & Tourism strategic plan (n.d.), "Dubai to become a pivotal hub in the global economy." The strategy has six main pillars: economic growth, economic competitiveness, business community happiness, economic foresight & planning, Advance DED, and Advance DED. It launched and managed Dubai Virtual Commercial City to allow virtual commerce. Knowing the main pillars of the Dubai Economy and Tourism strategy is very important to create a system by Dubai Police to enhance and fulfil their strategy.

2. 1.4 Dubai Government and VARA enabling Dubai Virtual Commercial City

The Dubai Government has shown interest in virtual world trading by adopting the law regulating virtual assets and establishing VARA (The Virtual Assets Regulatory Authority), which provides a sophisticated legal

framework to safeguard investors and establish worldwide standards for the virtual asset market. Under the new legislation, VARA would govern the industry across the emirates, covering notable development and free zones, except for the Dubai International Financial Centre. VARA, alongside the Central Bank of the UAE, will provide and monitor different FinTech services such as services for managing and utilizing virtual asset infrastructures, exchange services available across national or international currencies and virtual assets, virtual currency transferring services, exchange or trade between one or more virtual asset, virtual ownership and monitoring services for assets, portfolio-related virtual asset services, and services associated with the issuance and exchange of virtual tokens. (Derhally, M. A., & Glover, F , 2022). Therefore, this highlights the Dubai Government's proactive approach in regulating virtual assets and establishing the Virtual Assets Regulatory Authority (VARA) to govern the virtual asset market. This information is highly relevant to the thesis question of how the future of the Dubai Virtual Commercial City (VCC) will reshape the policing sector in various aspects such as: regulation of virtual assets, emergence of regulatory authorities, integration of virtual assets into business, cybersecurity and financial crime, cross-border implications, and technological and legal innovations which demonstrates Dubai's commitment to creating a robust regulatory environment for virtual assets and financial technology.

2. 1.5 Definition of a virtual world or city

Moreover, on virtual worlds, according to Guinchard, A. (2010), a virtual world or a city is a cyber environment in which players interact with each other and are presented by an avatar. The objectives of a virtual world can vary from one to another. For example, in Warcraft, the objectives of the player are game-related. In contrast, Second Life aims to connect with people, create a virtual community with shops, workplaces, and entertainment, and explore different virtual opportunities in different fields. It is similar to Dubai Virtual Commercial City, where they have a virtual currency that can be exchanged with real currency. According to Keene, S. D (2011), virtual lands are seen as assets just like the real world. They can be purchased or rented for storage, virtual shops, meeting rooms, events, etc. One of the successful examples of creating real-life wealth using virtual lands and property renting was Anshe Chang, making her the first millionaire through

virtual assets. Understanding the virtual landscape of Dubai Virtual Commercial City will help policymakers create the safety and security measures.

2. 1.6 Private and public sector interest in virtual cities

Keene, S. D (2011) explained that legitimate organizations showed interest in the virtual world, such as Coco Cola, Warner Brothers, MTV, and Sun Microsystem. They were present in the virtual world, such as Second Life, back in 2006 for various business-related purposes such as recruitment, hosting an event, meeting, training, trade, etc.

Moreover, government entities such as the US Navy, The National Institute of Health, The Army's Medical Research Command, and other governmental or semi-governmental entities also showed interest. This kind of virtual environment attracts criminals to perform illegal activities for money.

The interest in private and public sector on the virtual world reflect their interest in the virtual world and possibly in the Dubai Virtual Commercial City.

2. 1.7 Accessing virtual world/cities

As stated by Gainsbury, S. M., & Blaszczynski, A. (2017), To access virtual reality, the user has to utilize technologies consisting of a headset displaying the 3D picture. These headsets have huge goggles, which includes monitoring image of surroundings. Some virtual worlds need access through controllers, powerful computing devices, or even smartphones. The avatar is made to be more accurate and realistic to enable users to select their unique features; with the face monitoring, the facial expressions are more genuine in the game, which helps to promote high quality social interaction in the virtual world.

Moreover, in virtual worlds, a person can use real-life movements of the hands and the legs to navigate the virtual world. These environments enable users to attend virtual events and be present with friends and family. Moreover, as reported by Keene, S. D (2011), In order to activate a virtual account, the basic requirements in

most virtual communities are access to a computer with a Wifi Connection and the process of creating the account. If the player would like to proceed with the financial or economic activities, they must insert a credit card with the documents to be authenticated alongside their personal documents. After the approval of the account, the user will be able to trade using different virtual currencies and exchange them for US Dollars, similar to how many freelancers from poorer countries such as China and Mexico used to do in Second Life. It became widespread for many freelancers and business owners to set up "virtual sweatshops" that resemble real-life working conditions to make and produce different products to have a real-life salary. These virtual workers can gain up to 100 US Dollars per day; on a larger scale, this kind of virtual sweatshop and user-to-user trade can contribute to a larger scale equivalent to 50 million US dollars per month with more than 250 thousand virtual goods. The insights are valuable as it provides a glimpse into the intricacies of virtual worlds and the activities that take place within them such as the use of VR technologies, virtual economies, social dynamics, and the challenges and opportunities these aspects present for policing and law enforcement efforts within the context of the Dubai VCC.

2. 1.8 The background history and the main pillar of the virtual world

The concept of the Metaverse, or a virtual world, was first introduced in the science fiction novel "Snow Crash" in 1992. Then in 2008, Hendaoui, A., Limayem, M., & Thompson, C. W. (2008) developed an early idea of the Metaverse in which a virtual 3D world then the concept evolved according to Schumacher, P. (2022) to be an immersive internet with a more sophisticated and effective platform and social interaction. Later on, Dionisio, J. D., III, W. G., & Gilbert, R. (2013) suggested four features of the Metaverse or any virtual world: universality, realism, scalability, and interoperability. Moreover, Lee, L.-H., Braud, T., Zhou, P., Wang, L., Xu, D., Lin, Z., Kumar, A., Bermejo, C., & Hui, P. (2021, November 3) described the eight fundamental techniques to build a virtual commercial city which are: 3D modeling and rendering, network and communication, Artificial Intelligence and Machine Learning, Virtual and Augmented Reality, Blockchain and Distributed Ledger Technology, Internet of Things, Big Data analytics and Predictive Modeling—other researchers like Park, S.-M., & Kim, Y.-G. (2022) discussed the three main pillars of the virtual worlds, which are software (the

foundation of the digital technology that allows development, maintenance, and interaction of the virtual world) and hardware (the actual equipment utilized to access the world, such as PCs, Smartphones, IPads, Headsets and Gadgets). Lastly, the content refers to virtual items, places, and experiences made by the virtual worlds, including architecture, digital art, the ecosystem, etc. The insights contribute to understanding the technological and conceptual landscape of virtual worlds, the Metaverse, and the Dubai VCC and provide an introduction on how the usability and accessibility of VR technologies affect user participation, engagement, and possible difficulties faced by law enforcement in policing actions within these immersive virtual realms.

2. 1.9 The features of the virtual world and Web-3

According to Dremliuga, R., Dremliuga, O., & Lakovenko, A. (2020), Many advanced virtual worlds include technologies such as the Internet of Things and many hardware and software tools that stimulate the users hearing, sight, touch, taste, and sense of balance. There are four different features regarding virtual reality and the virtual world. First, with high realism, the body reacts to the virtual world as it can manipulate and influence its awareness and consciousness. Therefore, players can be scared in stressful situations in the virtual world or game. The second feature is that it can provide the consumer with a whole immersion experience, unlike traditional video games, as it is equipped with a helmet that can direct the user's hearing and vision on the simulated reality. The third feature is the low security of VR Gadgets and software, as they have a low level of protection against virtual hacking or threats that can reflect horribly on the human brain and influence the player's consciousness and unconsciousness. This can become a severe national threat and a cyber weapon between countries and can be used for criminal activity. The fourth feature is the virtual world and VR tools research and knowledge still need to be improved to understand how it will impact humans in the long term. Moreover, one interesting feature is that a virtual world provides a new social interaction never experienced before.

Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z. (2023) mentioned that since the establishment of the World Wide Web in 1989, The Internet has gone through different phases. The first phase is the Web-1 era; it is defined as a text-only Internet user who clicks on a link on the website to see a text, photo, and other

content established by the developer. However, neither the developer nor the user can collect information about each other. Later it evolved to Web 2, where users can surf the Internet and create and share content with each other; companies could collect data on their customers, such as transaction records and identification. Lastly, Web 3, which features decentralization and transparency, De-Fi (Decentralized Finance), and NFTs (Non-homogenous Tokens) are essential for the virtual commercial city.

This draws attention to a number of important elements concerning sophisticated virtual worlds, virtual reality (VR), and the development of the Internet. The findings add to the wealth of literature by demonstrating the potential effects of these technological trends on the future of the Dubai Virtual Commercial City (VCC) and their implications for the policing industry. They also provide an outline for investigating the technological, psychological, and ethical implications of advanced virtual worlds and their effects on the policing industry within the context of the Dubai VCC.

2. 1.10 Decentralization in the virtual world

In the decentralized virtual world, they rely on the blockchain, where their data is no longer stored in a private data database but in a publicly accessible blockchain that restores sovereignty to users. Bitcoin is one of the most famous cryptocurrencies that are public. Moreover, there are three existing blockchain types: public, private, and consortium. Currently, there are many practices in virtual transactions and blockchain; Szabo introduced the concept of Smart Contracts in the nineties with the help of different computer languages such as Java, Go, and Solidity. The use of digital assets has also become prevalent; a token is an example used in smart contracts for the exchange of goods and services. These tokens can be categorized into two types: fungible and non-fungible. These tokens are present in games, especially with the introduction of "play-to-earn," such as Axie Infinity and CryptoBlade. Tokens are also present in the Virtual world, such as Decentraland, Cryptoroxels, the sandbox, etc. Tokens are also present in social projects within the Metaverse such as Rally and Friends with benefits. (Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z, 2023).

Dubai Virtual Commercial City has a very similar concept to the Metaverse, the new internet experience with incredible realism and profound immersion. The virtual world can be centralized (governed by the government or technology company) or decentralized (no governance, owned by the community members). In the decentralized virtual world, the prime feature is "web-3," where users can control their digital assets and their digital currency without any tracking or tracing from the third party, which is the revolutionary economic infrastructure that replaces the in an organization to trust in decentralized nodes and codes which facilitates the development of the more transparent and equitable ecosystem. Grayscale Research (2021) reported that goods and services exceeded 200 million dollars in the Metaverse.

Overall, this provides insightful information that is closely related to the thesis statement on how the future of the Dubai Virtual Commercial City (VCC) will reshape the policing sector The conversation on virtual currency, blockchain technology, and the decentralised virtual world emphasizes the substantial movement in the VCC towards user sovereignty and data security. Incorporating smart contracts and digital tokens opens up new opportunities for transacting and trading goods and services, but it also creates difficulties for law enforcement in terms of fraud and dispute resolution. The idea of the Metaverse as a fully immersive online environment with a thriving digital economy underscores the potential economic significance of the VCC and the necessity for law enforcement to address possible financial crimes and fraud in this setting. Additionally, the gap between centralised and decentralised virtual worlds clarifies the mechanics of governance and control, highlighting how crucial it is to comprehend and regulate decentralised systems while upholding equality and transparency. In conclusion, these observations show how the Dubai VCC's growing technological environment will demand a proactive and flexible approach to police to provide a safe and equitable environment for all users of the virtual city.

2. 1.11 Advantages of the virtual worlds

According to Chen, B.-J., & Yang, D.-N. (2022), there are different advantages of the Virtual Commercial Worlds, such as the Metaverse or other virtual worlds, in this matter, Dubai Virtual Commercial City, which optimizes social interactions. It enables users to engage with each other more immersive and authentically,

allowing meaningful interaction to form. Also, it increases accessibility where individuals have more accessibility to experiences and situations that may not be attainable in the real world, such as traveling to faraway regions and exploring and discovering new entertainment. Furthermore, virtual worlds are more engaging than traditional media, and lastly, in a virtual world, there are countless business opportunities and new ways to enhance customer engagement.

Wall, D. S., & Williams, M. (2007) mentioned that the virtual world and cities have always been trendy, especially for commercial purposes. Second Life took over the world and developed its own currency that can be used in the exchange of commodities and services through maintaining marketing-friendly and international commerce in the virtual world and claiming to provide users with intellectual property rights over inventions and products in order to obtain and develop the environment to support and encourage the sustainability of its economy.

Insightful perceptions on how the Dubai Virtual Commercial City (VCC) may change the police industry in the future by Chen and Yang which demonstrates the benefits of Virtual Commercial Worlds, such as the Dubai VCC, especially in terms of expanding accessibility to activities that would not be possible in the real world and optimising social interactions. These elements highlight the potential for enhanced engagement and exchanges inside the virtual city, fostering a special setting where deep engagements may grow. Additionally, Chen and Yang's discussion of virtual worlds' captivating qualities raises the possibility that the Dubai VCC's immersive features might increase user participation and bring additional difficulties for law enforcement in maintaining a secure environment among increased contacts. Furthermore, Second Life's success serves as an illustration of the importance of virtual commerce in terms of the economy, according to Wall and Williams' conclusions on the trend of using virtual worlds and cities for commercial purposes. Strong regulatory and enforcement structures are required to handle possible financial crimes, copyright violations, and other legal difficulties as virtual currencies, intellectual property rights, and international trade evolve. Collectively, these observations highlight the need for an adaptive policing strategy that takes into account both the benefits and risks posed by the distinctive features of virtual commercial environments.

2. 1.12 Benchmarking with Estonia

According to Page-Duffy, A (2023), The developers of the Dubai Virtual Commercial City learnt a lot from Estonia's experiences as they share similar characteristics, firstly, being a governmental project rather than a privately owned project. Both Estonia and UAE shared similar visions and ambitions regarding the virtual economy, which strengthened the ties between the two countries and benchmarked the two models of virtual cities. The study showed that Both programs offer non-residents a chance to explore the local business market in distinct ways. Most of Estonia's government services are available online and accessed for virtual residents, like Estonian citizens: via an electronic ID. At the same time, Dubai offers a trade license and a customized package of service providers allowing virtual residents to conduct business in the UEE via a specialized portal. The e-Residency initiative offers a digital identity issued by the government, granting complete access to Estonia's e-services and transparent business environment. E-Residency enables digital businesses to start and operate an entirely virtual EU-based business from any location on the planet. A promising application grants a person a digital ID card that gives access to the same government e-services as an Estonian citizen or resident, in addition to a variety of private services, such as financial services, virtual workspace, and autonomous or customized business services. Similarly, Dubai Virtual Commercial City (VCC) offers an atmosphere for multilateral businesses wherever they are nor their location. The VCC program provides a Virtual Corporation License, business permit, admission to the official e-commerce portal known as DubaiStore.com, and availability to financial services. The Virtual Company License grants access to designated service providers and digital infrastructure. Estonia and Dubai's legal and commercial ecosystems have unique structural distinctions from the UAE. Most business activities in the UAE demand licenses that must be periodically reissued and are usually hard to obtain.

In contrast, Estonia requires licenses for just a tiny subset of regulations. Typical company operations in Estonia do not require a renewal of permission after formation. Therefore, the UAE creates a personalized business owner-government experience, necessitating that the owner maintains continuous, positive relations with the government to continue operating. However, this makes it simple to discontinue business if the owner wishes to. The same procedure can take up to six months in Estonia, regardless of the company's size. Another

significant difference between the two models is that the Dubai VCC is more selective of the applications and businesses as they have to align with their rules and regulations.

In contrast, Estonia is more flexible with the applications and the business. There are legal differences between both systems. The UAE supports and encourages Islamic finance and trade, which is an advantage to the investors who favor the Sharia-compliant financing model, whereas Estonia is part of the EU; therefore, they can trade with other members of the single market with no custom declaration nor charges.

The UAE hosted a Virtual Global Business Summit to discuss virtual business and digitalization alongside Estonia in December 2020; over 30 countries were invited to share their knowledge and experience on innovation in order to create a fundamental transformation, and Estonia joined Expo2020 to exhibit the various virtual businesses and the e-residency program within their virtual city.

The research by Page-Duffy illuminates the important lessons learned from Estonia's experiences in guiding the creation of the Dubai Virtual Commercial City (VCC), providing insightful viewpoints on the potential ramifications for the police industry. The parallels between the two government initiatives in Estonia and the United Arab Emirates lay a solid groundwork for international cooperation and information sharing, emphasising the shared goal of using virtual economies. The comparison of the e-Residency programme in Estonia and the Virtual Company Licence programme in Dubai shows the creative ways used by both nations to draw in foreign investors and businesspeople. The legal and economic environments in Estonia and Dubai, however, provide various options for streamlining corporate activities. The UAE's tailored strategy places a strong emphasis on preserving good connections with the government for ongoing operation, which might create particular difficulties for enforcement in terms of ensuring regulatory compliance and upholding a safe workplace environment. However, Estonia's more adaptable strategy and compliance with EU rules offer insights into possible benefits in terms of scalability and corporate operating simplicity. In terms of monitoring and enforcing compliance with laws and regulations, the two models' divergent selectivity of apps and enterprises has ramifications for the policing sector. Furthermore, Estonia's participation in the EU single market contrasts with the UAE's emphasis on Islamic banking and commerce, presenting two divergent economic environments that may have an impact on online business activity. The joint initiatives, such the

Virtual Global Business Summit and Estonia's participation in Expo2020, illustrate the attention that these online projects receive on a global scale. With these ideas in mind, the Dubai VCC's police sector will need to negotiate the difficulties presented by these many models, assuring the safety, security, and compliance of companies while adjusting to particular legal contexts and global partnerships.

2. 2. Cybercrime in Virtual Commercial Cities

2. 2.1 Introduction to cybercrimes

Blockchain has become a valuable target for hackers and virtual criminals where they exploit smart contract vulnerabilities and blockchain protocol ecosystems. Exchanges to virtual marketplaces such as OpenSea and Rarible operate centrally, making them vulnerable to code exploitation. An incident in 2021 of code exploitation occurred in OpenSea where 42 NFTs worth 100,000 US Dollars disappeared from the Marketplace. This is an introductory example of countless kinds of virtual crime. (Keene, S. D, 2011).

2. 2.2 The Virtual Mafia and organized crimes

Where there is wealth, there is a crime. According to Keene, S. D (2011), The incentives for virtual crimes are very similar to real-life crimes; however, due to the vagueness of the virtual worlds, the consequences and the outcome differ; theft and destruction of property are the most common financial crimes in the virtual worlds. As a result, private security groups have formed, accurately defined as virtual mafia organizations. Moreover, Leitzel, J., Gaddy, C., & Alexeev, M. (1995) mentioned that these mafias and other organized crime groups are trying to maximize their financial advantage and rely heavily on the state's inability to provide enough protection for lawful transactions. Therefore, the more confusion in a country's structure, the more incompetence of its police force, the more inefficiency of its courts, and the more mafia will flourish. In

contrast, if the laws and orders are established, the demand for protection from these virtual mafias will decrease, and a more efficient police force and courts will, therefore, less crimes committed by the mafia.

The presence of the virtual mafia is considered one of the main uncertainties when it comes to the future of the Dubai VCC. It is important to ensure safety and security to minimize unwelcomed interventions.

2. 2.3 Legislation obstacles of the Virtual Worlds

Setting rules and regulations in the virtual cities should be attentive to the specific demands of the virtual community in order to respect and acknowledge the diversity of individual users and their desire and eagerness to discover new opportunities within the virtual city. Furthermore, legislators must be open-minded and aware of the different scenarios within the virtual world; in EVE game, stealing and hijacking by other users is permitted. In other games or virtual worlds, it can cause a massive conflict (De Zwart, M, 2009).

According to De Zwart, M. (2009), one of the main obstacles to commerce and trade in the virtual world is the need for more clarity and transparency regarding the attempts to ensure the protection and preservation of the rights promoted by the platform providers. Moreover, The confusion can lead to the disinterest of the platform customers and disengagement in commerce. Therefore, a successful platform or virtual city needs consistency in governance and resolving issues. A great example is Blizzard, an American video game developer; it has created a fair use handbook for virtual videogames creators to present how far the influence of the virtual world can extend beyond the platform to interfere with the laws of intellectual property rights and trademark. The handbook reflects on the importance of governance and implementation of a relationship management approach to control some economic and commerce matters and clarify the terms, conditions, and users' rights regarding freedom of speech, conflict resolution, and intellectual property ownership.

Fairfield, J. A. T. (2008) proposed that the court and the real-world legislators should recognize the community standard and the real world norms when resolving a virtual dispute between the players and when evaluating the offenders' act and how they should be punished. In another paper, Fairfield, J. (2008) rewrites the "magic circle" in a way that specific boundary between a virtual law and real world law, where players accept the terms

and conditions and agree to an end-user agreement license (EULA) which establishes the highest degree of legislation and control of the interaction between the developer and the player. Therefore, create community standards that govern the virtual world's operational regulation, which real-world legislation enforces. Wall, D. S., & Williams, M. (2007) also proposed that the national Government should develop a virtual commercial city by establishing a universal, comprehensive legislative framework that defines a certain degree of regulations that resembles the real world and matches the basic terms and conditions on the standard level. Hence, customers and users are aware and familiar with the policies and unique terms and conditions of each virtual world, as they should be communicated to the users. This insight is very valuable when proposing the virtual policing strategy in Dubai VCC.

2. 2.4 Different kinds of Cybercrimes

Wall, D. S., & Williams, M. (2007) mentioned different types of cybercrimes. The first type is hybrid crimes; these kinds of crimes embrace the middle ground of a classic crime surfacing in the virtual landscape, such as transactional fraud, financing terrorism & international exchange of child pornography. These kinds of crimes can be committed online or offline. The second kind of crime he mentioned is known as a "true" cybercrime, which is exclusively the result of opportunities offered by the Internet and can only be committed in cyberspace, such as spamming or phishing. The third kind is known as computer integrity, and this means attacking the security network access methods, which includes hacking, cracking, sabotaging, stalking, spreading viruses and trojans, and unauthorized access in order to gain money, products, services, or data. Moreover, the fourth type is computer-content crimes, which include trading and distributing of pornography, broadcasting of hate crime materials, or violent videos portraying killing or abduction.

2. 2.5 Legal gray areas in virtual world and risks

Although freedom of speech is a protected right, there are some gray areas within crime laws; depending on the severity, the law can take different directions. However, due to the extraordinary freedom of cyberspace, some

associate it with danger, especially with various uncertainties and risks. He mentioned other major concerns and risks are intellectual property ownership, privacy, surveillance, age appropriation materials, and other risks that should be considered and handled per the virtual world community standards and enforcement methods. One of the biggest concerns talked about by Keene, S. D (2011) where there is a possibility that virtual crimes can also lead to real life crimes; Take the case of a woman in Delaware who was charged with planning to kidnap her virtual boyfriend and the case of the Japanese year's old teenager boy who was charged with stealing ID and Passcode in order to steal virtual currency and exchange it with real money and the case of 45 years old Thomas Montgomery whom his friend killed as a result of jealousy of another female avatar. Another case of murder was when Zhu Caoyuan was murdered by another fellow player called Qiu Chengwei, who was later sentenced to death because of a virtual theft where Zhu Caoyuan stole and sold "Dragon Saber" on eBay for 700$. The frustration and injustice in virtual crimes can lead to real life crime. This indicate the importance of establishing a virtual policing and jurisdictional system to avoid extending the crimes to real life.

2. 2.6 Financial and non-financial virtual crimes and scams

Similarly to De Zwart, M. (2009), Keene, S. D (2011) has defined virtual crimes into two categories depending on the motive; the first type of motive is financial, whereas, in non-financial crimes, the motive is to satisfy the criminal, malicious intents such as child pornography or any other behavior including violence. Financial crimes are very high risk in all the virtual worlds or cities. According to the Fraud Advisory Panel Initiated by the Institute of Chartered Accountants in England and Wales, countless loopholes put virtual users at high risk of theft and deception, more specifically initiated by gangs to commit identity theft and card theft tax invasion. Hackers use bots to perform illegal repetitive operations to steal virtual assets or use Copybot in order to copy and resell products instead of paying for the original shop or freelancer. For example, a teenage girl is stealing 4,000 US dollars of virtual furniture by tricking the victims. The issue was that this kind of case was difficult to evaluate because it is hard to identify the real value of the virtual product compared to real life products. Guinchard, A. (2010) also reinforced how common "Copybots" are among virtual retailers in different virtual worlds, according to Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z. (2023). Wash trading is

another common financial crime in the virtual world; it is the frequent trading of assets to produce misleading market information. To put it into perspective, the project pays out incentives for trading in the platform. The wash traders unlawfully grab all the NFTs' profit, which misleads the Marketplace into a trusting platform as active traders are presented. Thus traders affect the value of the assets and profoundly control the market.

Moreover, on financial crimes, The International Monetary Fund has defined *financial crimes* as "any non-violent crime that generally results in financial loss." According to Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z. (2023). the rapid development of the Web-3 and the virtual world ecosystem has birthed more financial crimes where scammers have discovered new ways and opportunities for unlawful earning especially with the absence of efficient regulations on the blockchain turning it into a hotbed for criminals activities. Virtual scams can be categorized generally into different kinds: Ponzi schemes, Rug Pull, Phishing attacks, Fake exchanges, and giveaway scams. Furthermore, the Ponzi scheme is seen as a form of "play to earn" because they rely on the promises of high returns to lure investors into participating, thinking it is easy and quick money, but they find themselves in a scheme with nothing in return, various low-income players from South Asia played with the hope of getting money in return. The second kind of financial scam is called Pulling the Rug; this means the operator of the project or the investment abruptly withdraws from the project money entirely, leaving the investors with nothing. The Big Daddy Ape Club incident in 2021 was an example of the pull rug scam in NFTs where the creator unexpectedly removes all the funds, which were at the time equivalent to millions of dollars, leaving the NFTs worthless. Phishing attacks are the third kind of scam; they occur by sending the victim different fake website links hoping they would fall for it and type their personal data such as credit card information. The fourth kind is fake exchanges; an example is the BitKRX incident which the Korean Government exposed for fake exchanges of crypto and bitcoin and other scams. To give perspective, Wall, D. S., & Williams, M. (2007) mentioned that cyber fraud is the easiest method for criminals to commit in cyberspace and to lure money. An incident occurred in 2008 in Second Life, where the virtual users were tricked by a virtual character called "Nicholas Por- tocarrero" who claimed to be a banker and portrayed to the community that they could trust him with the money exchange and later stole all their money, too many people where affected and the problem became severe enough for the controllers to deactivate all the virtual ATMs and banned banks in the virtual world and provide a helpline for victims of fraud. Although law enforcement took

the matter seriously, it was very challenging for the Police to investigate due to the circumstances of the virtual world. Giveaway is the fifth kind of scam, and there are multiple cases, one of them is the announcement of the launch of MetaRPG and ApeCoin, many creators posted malicious links and tricked their followers to send funds, and gained around 900,000 US Dollars from this giveaway.

Moreover, Keene, S. D (2011) mentioned that money laundering is also one of the biggest concerns within virtual commercial cities when it comes to the virtual world, especially with very minimal supervision for transactions. Criminals have the privilege of hiding behind the avatar, making it extremely difficult to identify them. There are various ways criminals can launder money, such as creating multiple accounts with different identities to fund an organized crime, selling drugs, and smurf to avoid the formation of certain records such as bank deposits or other suspicious financial transactions.

2. 2.7 Common non-financial virtual crimes

Moreover, Wall, D. S., & Williams, M. (2007) also talked about the most common cybercrimes in the virtual world; this includes pedophilia, child pornography, identity fraud, malicious files and malware, and racially motivated crimes. Guinchard, A. (2010) In Second Life, the expression of "sexual acts" among avatars are allowed. In the eyes of many legislators, these behaviors land in the gray area. Can these activities in different scenarios resemble harassment, rape, or child pornography? How about the suspicious virtual finance exchange? Can they raise warning alarms, and could they lead to fraud and real-life victims, and money loss? How about killing or murder in virtual crime? Killing or any physical assault can be considered a serious crime with a long-term imprisonment penalty, whereas in the virtual world, the damage is not seen from a long distance; therefore, it is not urgent or severe in the eyes of law enforcement. According to Guinchard, A. (2010). In a case in MapleStory in 2008, a lady from Japan hacked her virtual partner's account. She killed his character as revenge for initiating a divorce, resulting in financial, societal, and emotional damage to the partner.

Similarly, a famous case of the LambdoMoo rape, where a lady was subjected to nonconsensual sexual dialogue while being trapped virtually and controlled by the abuser, is equivalent to real life sexual harassment. Law enforcement takes fear of violence in the virtual world more seriously if the offender lives remotely close to the victim's neighborhood or they know each other in real Life, as the authorities fear that it might elevate to a real world crime. Similarly, in the case of the distribution of pornography, a person may choose an avatar that resembles their unique traits and features; therefore, blackmailing and widespread pornography without the party's consent can be very distressing and scary. The blackmailers can take advantage of the vulnerability of the other party and ask them for money or make inappropriate requests, and countless young children fall into this trap. This can be very similar to the distribution of real life child porn where the image is clear enough for viewers to recognize the child's body but unclear for the software to detect. In another scenario of presenting a virtual child that engages in an intimate relationship with adult character with extreme graphic imagery of pedophilia. Many argue that the images look realistic and that it is very hard to differentiate if the content is real children or animation. This is a gray area in the law. Is it considered child pornography or not? This behavior is very problematic to handle in a virtual world with lots of child pornography content, such as Second Life.

2. 2.8 The desperate need for governance in the virtual world

The need to increase governance of a virtual world is a necessity due to various reasons such as taxation, money laundering, ethics and regulations, virtual crimes such as hacking or illegal access to an account or details without the user's consent, and other harmful behaviors such as inappropriate and controversial content and extreme racism, religious hatred, misinformation, sexist, slavery, harassment, exploitation and hate speech such as excluding foreigners and outsiders and the tendency to look at the world from their own culture as "the first world" and superiority than the rest of the world, these acts were surfacing in some virtual worlds such as Second Life; therefore, it became mandatory to govern the virtual landscape. Virtual worlds such as the City of Heroes have implemented some efforts to explore different rules and regulations in the virtual world and come up with filtering and monitoring offensive and inappropriate content systems. The most common virtual city community standards and enforcement methods include expelling, suspension, banning, and loss of status and

power. De Zwart, M. (2009) Guinchard, A. (2010) Virtual crimes are not taken as seriously as real life crimes. In many scenarios, many "dismissed financial cases" can reach up to the maximum jail term of 10 years in the case of stealing, whereas a very similar virtual fraud can occur with the same damage, and the sentence can reach to 2 years in jail.

2. 3. Policing in the Virtual World

2. 3.1 The threats due to absence of standards and regulatory guideline

Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z. (2023) suggested that there are a variety of threats to the virtual world, including the Metaverse. One of the key security threats is that users' data might be compromised; this includes many risks, such as data breaches, cyberattack, and illegal access. Moreover, these data can be used by a third party; therefore, the virtual world should implement stronger data protection regulations, such as data encryption or consent requirement, to guarantee that users maintain ownership over their private data. Moreover, the virtual world, like other platforms, employs different technology standards and protocols which can limit the users' options and create a barrier between one virtual world and another. He suggests that there should be a common technical standard among the virtual commercial cities in the future. In addition, content moderation is another risk that creates danger among virtual citizens. Meanwhile, ensuring to safeguard free speech, he suggests that there should be explicit content rules and enforcement measures. Due to the absence of trade standards and regulatory guidelines, the Web-3 enabled Metaverse and another virtual world ecosystem to be subjected to a wide range of financial crimes such as fraud, malware, wash trading, money laundering, and illicit services and business. According to Grayscale Research (2021), Cretik, a blockchain security company, has reported that more than 2 billion US Dollars were lost from business and initiatives in Web 3 in the first two quarters of 2022 due to hacking, loopholes, and vulnerabilities of the currency ecosystem of the Metaverse and the uncertainties as it is still in immature stage yet. Furthermore, there were various profit-seeking activities such as gambling, luring new investors, and generating new concepts; therefore, the absence of established standards and regulatory restrictions in the Web 3 Metaverse

gives it a more concealed environment for crimes. Thus, it is necessary to extend the financial laws to the Metaverse or, in our case, Dubai Virtual Commercial City.

2. 3.2 The concerns of Virtual Worlds/Cities

There are other concerns Dremliuga, R., Dremliuga, O., & Lakovenko, A. (2020) have discussed, such as the legal approach is still unclear when it comes to the regulatory virtual world and no real evaluation of possible future harm. For example, it is still unclear what virtual crimes are and if virtual sexual harassment or rape are perceived as actual crimes. (Lamely, 2018) explained that Bangladesh's Problem enforcement of any given law has a restricted geographical scope. For example in the case of illegal virtual crimes committed, the offender may be able to avoid taking accountability, if the crime took place in Bangladesh. If, according to the local law, it is not a crime, then it is not considered a crime, then there is no mechanism to hold international criminals accountable for their offenses.

Moreover, according to Gainsbury, S. M., & Blaszczynski, A. (2017), gambling has become very popular in the virtual world. It is a constant struggle for regulators to keep track of all the illegal gambling practices in the virtual world and ensure they are regulated and monitored to protect the customers and their rights. Therefore, there is a huge urgency regarding customer protection, especially with matters that have yet to be considered by the jurisdiction.

2. 3.3 Virtual Crimes extending to reality

There are many cases where the authority and the police forces got involved in a virtual crime. In 2005, a Chinese student was arrested in Japan for designing a virtual bot to attack and rob valuable assets and possessions. Another example, another Chinese student called Wang Yue Si was arrested by the Japanese police force for selling illegal virtual weapons and currency, he made a profit of around 1.3 million dollars.

2. 3.4 Peacekeepers in the Virtual World to combat crimes

Currently, the most common practice to control virtual communities is "the peacekeepers," which are volunteers taking over police duties to maintain virtual citizens' peace and safety. This model is known as "the volunteer community policing model". They are trained to interfere with investigating occurrences of violence, harassment, or abuse and other relevant cases. However, the peacekeepers have options of penalty such as account suspension, account removal, temporary suspension, and the maximum punishment they are entitled to is to communicate with the offender's network service provider to disable them from entering cyberspace; however, these kinds of punishments always have loopholes, the players or the citizens can reinvent himself a pick a different IP to re-join the virtual city. These technical deficiencies restrict the peacekeepers' ability to tackle crimes. This can cause heavy stress and pressure on the controllers because of the internal gut and social discomfort. Some virtual communities such as Second Life and E-bay rely on a "reputation management system" to humiliate and shame rule-breakers. Although it can be chaotic, this method was proven to be successful in minimizing the crime rate in the virtual world. According to Braithwaite, J. (1990), the Stiminization theory is effective for people with criminal motives to feel pressured due to social pressure. The shaming punishment is effective, and it usually results in the offender leaving the virtual community or changing their behavior to gain social acceptance. An example of shaming in the virtual world is the virtual rape case in lambdaMOO in 1993; after multiple failed trials to exclude Mr. Bungle from the virtual community, they ultimately decided to shame him into forcing him to leave, which worked. Similarly in another sexual harassment case in another virtual community known as JennyMush, where a lady suffered from trauma after being verbally assaulted, the community collectively stood by her side and shamed the offender in order to exclude him from the community. However, this kind of punishment cannot replace police presence and the peace and control they can bring to virtual cities.

2. 3.5 DeFi in the virtual world to combat crimes

There are decentralized autonomous organizations formed to coordinate and collaborate via a set of common rules implemented on the blockchain, an example of these organizations is Yield Guild Games. The

introduction of DeFi, or decentralized Finance, boosted the industry of the NFTs, especially with the availability of specialized financial services such as lending, savings, and insurance, with attracted even more investors (Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z, 2023).

2. 3.6 The nature of the police

The Police's nature is to uphold the law and ensure public and community safety. In this context, the communities can be categorized in many ways depending on ethnicity, geographical location, belief, class, gender, etc. In this case, virtual communities are what is known as the "third place" outside of physical boundaries. Virtual games such as eBay, CyberWorld, and Second Life are known examples of the "third place" where there is a sense of belonging, shared responsibilities, and sense of communal space among the members similar to their territorial state where they can experience culture and trends but from a physical distance. Traditionally, the Police were in charge of controlling a physical geographical territory whether it is a city or a country, which tends to share common history, values, languages, and religious beliefs. Whereas, with the introduction of cyberspace, police work became more complex, especially with the emergence of the culture-at-distance concept. (Wall, D. S., & Williams, M. 2007).

2. 3.7 Criminal exploitation in the virtual world due to lack of police presence

There is so much dysregulation within virtual communities. Lately, we have witnessed an increase in criminal exploitation in different virtual worlds. Many players in Entropia (A virtual game) experienced account hacking, or "online mugging," especially because players must gather artifacts and sustain them to advance in the game. Many players are willing to spend real money in order to fasten the gathering process which makes them a target to mugging.

There was a real court case and an arrest for a Japanese student for using automated bots to make his avatar move faster, resulting in him stealing and attacking other players. The challenge with cybercrime requires real-life damage in order for the criminal justice system to approve of it. The illegal trade or stealing of virtual

currency has a higher chance of getting dismissed on many occasions for not having real life solid ground evidence.

Another challenge is a lack of police presence in the virtual world; virtual worlds are supported by "peacekeepers" to maintain and regulate the virtual community however, they lack the tools and power to enforce serious consequences on the offenders. Moreover, it is very difficult to detect the real identity, especially behind the avatar and the fake persona.

2. 3.8 Virtual crimes are not a priority to the police

The existing law practiced is typically extremely slow to respond to fast pace technologies and trends, including the emergence of new cyber and virtual crimes. Although the existing law has been used numerous times in a virtual crime however, in many cases, it falls under the gray area where there is no law to incriminate a bad act, or virtual crimes are not a top priority in the eyes of the court of justice. Therefore, it imposes a greater regulatory challenge on the "peacekeepers" and the virtual world's developers. (Wall, D. S., & Williams, M. (2007).

Another obstacle is known as minimis trap, a trait shared by various cybercrimes resulting in a low impact, mass victimization which results in massive aggregate losses scattered all over the world. However, because it does not come under the policing emergency/dangerous paradigm nor Police priorities, the case gets dismissed due to preserving resources for local level cases as per police strategy.

Another obstacle is the inconsistency of legal crimes, which involve multiple jurisdictions. Although protocols and COE cybercrimes and the establishment of multi-agency partnerships and forums to facilitate interforce cooperation, there are still various obstacles and a huge international jurisdiction difference depending on the cultural differences in defining the gravity of the offense other crimes. Theft of a trade secret is considered a criminal offense in the United States where, whereas it is a civil offense in the United Kingdom.

On a similar note, virtual crimes can be seen as completely foreign to the Police due the severity and seriousness still unclear according to the law. Moreover, according to Boyle, J. (2017), using technologies as

regulators is impossible for various reasons such as limited technologies, the geographical distribution of the players, the nature of the environment, and the characteristics of the Internet at the time.

2. 3.9 Technology as regulators

Furthermore, Nadel, M. S. (2000), mentioned that Lessig (1999) discovered the architecture of the Internet and the importance of connecting all the elements together to be able to rely on technology as a regulator for it is various benefits.

Firstly, technology can interrupt human action and encourage them to rethink paths and objectives.

Secondly, programming technology and architecture can be easily molded as it is flexible for those who have controller access.

Thirdly, the manner in which technology can detect suspicious behavior is instantaneous and more accurate than the traditional form of regulation of cyber crimes.

Fourthly, technology has a proactive approach and is more readily adaptive to virtual criminals' behavior and hazard than laws and standards are, allowing it to have more control over the virtual cities, which leads to another benefit which is that technology is capable of modifying the system architecture involving establishing preventive strategy.

Lastly, neutral control of technology makes it less problematic which can eventually be used as a police model.

2. 3.10 The reassurance gap in the virtual world

The higher the crime rates in cyberspace with minimal police presence increases "the reassurance gap," which leads to an increase in more public concerns and more demand on the Police to reform their operations. Therefore, Wall, D. S., & Williams, M. (2007) suggests that the public police role must be refined to include a

wide range of cross-jurisdictional concerns in order to properly engage and respond to virtual crimes. To improve the current restricting involvement of the Police in the virtual world and to increase policing reassurance, there must be a broadly and internationally accepted framework and effective policing structure and cooperation.

2. 3.11 Regulatory attempts in the virtual world by governments

Although most of the emerging virtual cities are moving towards decentralization, the rules and regulations are still an important matter for developers and users. There are countless studies focusing on the security of the smart contract as the virtual economic system as it is very crucial in the virtual world. The Financial Action Task Force on Money Laundering (FAFT), the world's greatest international agency working to fight financial fraud, updated the guidelines on virtual assets and network providers in 2021, requiring states to evaluate and minimize the hazard of financial activities involving virtual assets. However, there are many loopholes still incomplete in the virtual world, causing panic among investors and stakeholders.

Therefore, various governments stepped in to regulate the virtual financial system. For example, the United States of America they have introduced the Anti-Money Laundering Act 2020 Section 105, stating digital assets have been included in the regulation of the Bank Secrecy Act to monitor the dangers presented by digital assets and formulate regulations to resolve vulnerabilities and encourage technologies to guarantee the safety of the digital assets.

Canada also suggested stricter virtual currency rules for trading, considering the service providers, the issuer of the virtual currency, and dealers must register as financial service businesses.

European Union introduced the Fifth Money Laundering Directive to govern the EU's cryptocurrencies in 2020. Also known as 5AMLD where cryptocurrency and wallet providers are obligated to register with their national financial authority; this includes performing diligence on their customers and analyzing all transactions for any suspicious activity.

Moreover, the British Government also encourages cryptocurrency circulation through the StableCoin payment method. They recommended an economic, legislative renewal process of the cryptocurrency and assets. The UK regulatory banks put a statement for the crypto-assets sector on the importance of identifying the business customers, monitoring the transactions, evaluating the risk, and submitting the report in a timely manner.

The Australian Government regulates crypto-assets through the Security and Investment Commission. Cryptoassets exchange or secondary network providers need registration and are subject to AML/CFT regulations.

In Singapore, digital payment tokens and crypto-assets service providers Payment Services Act regulates both. Singapore has enticed the Financial Services and Market Act 2022 which regulates crypto-assets firms based in Singapore but also offers international services to other nations. Moreover, some other measures were imposed, such as a new licensing requirement for virtual trade.

Japan was one of the first countries to accept and implement cryptocurrency legislation. There are various token kinds that are controlled by distinct regulatory measures. However, in China E-CNY is the only recognized legal virtual currency that can be used as cash too, trade in any other cryptocurrencies has been forbidden since September 2021, Globally, the regulation of digital assets is still immature, and many countries are still testing different rules and regulations. (Wu, J., Lin, K., Lin, D., Zheng, Z., Huang, H., & Zheng, Z, 2023).

These insights are rich and it showcase the importance of benchmarking with other nations to enhance the virtual policing in the DVCC.

2. 4. Dubai Police

2. 4.1 Dubai Police Structure and Operations

According to Dubai Police (n.d.) The Dubai Police Force was founded on June 1, 1956, and had its headquarters at "Naif Fort" until 1973, when it was relocated to its current site in Al Tawar. Afterward, "Naif

Fort" was converted into one of Dubai's police stations. Dubai Police is a crucial element of the Police Force of the United Arab Emirates. Its purpose is to enhance the quality of Life in the country by enforcing the law and ensuring the safety and security of the community and its citizens.

2. 4.2 The organizational structure of Dubai Police

The Current Organizational Structure of Dubai Police from the top is Commander in Chief of Dubai Police, followed by seven sectors with appointed Assistant Commanders-in-Chief. The first Community Happiness and Logistic Support Affairs sector, Ports Affairs sector, Academic affairs and training sector, Excellence and Pioneering Affairs sector, Operations sector, Administration affairs sector, and Criminal Investigation sector. There are separate entities that report directly to His Excellency Commander in Chief of Dubai Police such as Headquarter Regulatory Office, Resilience Center, Esaad Card Center, Police Judiciary Council, Internal Audit Office, and Governance and Compliance.

The different sectors include different departments. The first sector, Community Happiness, and Logistic Support Affairs sector includes the Protocol Department, General Department of Community Happiness, General Department of Logistic Support, and Institutional Development Office. The second sector is the Port sector, which includes the General Department of Airports Security, Ports Police Station, Dubai Police Air Wing, and Institutional Development Office. The third sector is the Academic affairs and training sector, and it covers the Hemaya Schools Office, Dubai Police Academy, General Department of Training, and Institutional Development Office. The fourth is the Excellence and Pioneering Affairs sector, which includes the General Department of Excellence and Pioneering, the General Department of Human Rights in Dubai Police, the Future Foresight And Decision Support Center, and the Institutional Development Office. The fifth sector is the Operations sector. This includes the General Department of Traffic, General Department of Operations, General Department of Organization Protective Security and Emergency, General Department of Transport and Rescue, and Institutional Development Office. The sixth sector is the Administration affairs sector. It includes the Dubai Police Health Center, Center for Quality of Life, Financial Control Department, General Department of Administrative Affairs, General Department of Human Resources, General Department of Artificial

Intelligence, General Department of Finance, and Institutional Development Office. The seventh sector is the Criminal Investigation sector, and it includes Oyoon Center, the General Department of Forensic Science and Criminology, the General Department of Anti-Narcotics, the General Department of Punitive and Correctional Establishments, Police stations (Bur Dubai, Al Muraghabat, Nad Al Sheba, Al Rifaa, Jabel Ali, Hata, Al Qusais, Al Rashidyia, Al Barsha, Naif, Al Khawaneej, Dubai Mounted Police, Criminal Information Department) and Institutional Development Office.

Moreover, Different general departments work together in order to fight virtual crimes, such as The Cyber Crime Department, which is in charge of investigating and prosecuting cybercrimes. It is composed of highly qualified experts in digital forensics, computer science, and criminal investigation. The Criminal Investigation Department (CID) investigates a vast array of illegal acts, including cybercrimes. It collaborates with the Department of Cybercrime to investigate and prosecute cybercriminals. Moreover, the Department of Forensic Science and Criminology is responsible for supporting criminal investigations, including cybercrime investigations, with forensic services. It offers digital forensic services, including data recovery and analysis, to aid in the investigation of cybercrimes.

2. 4.3 Dubai Police's Strategy

According to Dubai Police (n.d.), the current strategic vision is to be a Police Pioneering for a safe city, and the mission is to strive to make Dubai the city of security & sustainable safety through providing innovative smart service and global institutional excellence in an environment that promotes innovation and creativity aiming for community happiness. There are three smart goals within Dubai Police.

First, Innovation in Organization Capabilities; Second, a Safe and Resilient City; and lastly, Society Happiness. There are different indicators to measure each goal, and for example, the first goal can be measured by how effective and efficient the human capital and the technical resources are, as the organizational performance and the physical resources.

Whereas, in the second goal, it is measured by the crime reduction rate and road fatalities, crisis management, and safety of the facilities and individuals.

Lastly, the third goal is measured by the enhancement of safety and security in addition to the confidence of the Police and the happiness and quality of Life of the citizens of Dubai.

2. 4.4 Operations within the Dubai Police

According to Future Foresight Centre in Dubai Police (2021), Dubai Police is currently in charge of 13 various operations, which are crimes against the person, monetary crimes, cheque crimes, search and rescue crimes, traffic control, airport security, port control, prisons, building security, VIP handing, counterterrorism, forensics, and cybercrimes. In comparison to other prestigious police forces such as Australia, they are only in charge of 6 out of 13 listed operations, Singapore is in charge of 8, New York Police is in charge of 5, Vienna is in charge of 5, Hong Kong is in charge of 11, and Canada is in charge of 8 of the 13 listed crimes.

2. 4.5 Digital transformation in Dubai Police

Moreover, Dubai Police, with its current strategy, strive to advance its digital technologies to cover more operations in more effective and efficient ways. There are countless examples of the digital transformation of the Dubai Police. According to Dubai Police (2022), The Human Resources General Department has implemented HR Operation Room and Efaad Platform in order to automate the daily operations of the employee's services and the data analytics process. The Future Foresight Centre has developed a data analytics platform that shows the latest trends in policing-related matters. The General Department of Artificial Intelligence has developed Amna, a virtual assistant to enhance the customers' experience. The Innovation Center, too, has developed an innovative platform which is a search engine. Moreover, The Criminal Investigation Department has developed Oyoon (Police Eyes), which uses smart surveillance tools with proactive features to warn the officers in case of suspicious activities, and there are many more examples.

2. 4.6 Dubai Police in Combating Virtual Crimes

According to Ahmed, A. A. (2023, March 9) from Khaleej News, Dubai Police is one of the leading police forces in combat cyber crimes, which has the potential to extend into virtual crimes such as drugs trade, human trafficking, money laundering, child pornography, and many other crimes. Every year, Dubai Police hosts the World Police Summit. In 2022, the approach at the summit was clearly focused on combating virtual crimes, especially with the future uncertainties and the new advanced technologies. The Crime Prevention Conference, World Police Summit (2023) have included different workshops to discuss virtual crimes, such as the Anonymity vs. Intelligence: Tracing Fraudulent Cryptocurrency Transactions workshop; they have discussed the importance of developing sophisticated software to track suspicious activities and employee training of new skillset to use this software. In Anti-Money Laundering: Regulating Designated Non-Financial Businesses and Professions Globally workshop hosted by Abdulrasheed Bawa, Executive Chairman Economic & Financial Crimes Commission in Nigeria, he also discussed the importance of having global governance to monitor money laundering, especially with cross border criminals operations. Moreover, Anthony Cook also discussed at the summit the current trend of using virtual currencies and wallets and taking advantage of decentralization and anonymity to commit financial and tax fraud. He emphasized the importance of addressing virtual crimes from a holistic approach and as an international threat with no borders in order to combat it together collectively. These summits, benchmarking visits, and collaborations are preparing Dubai Police for safeguarding the Dubai Virtual Commercial City when it is ready and done.

Dubai Police also showed great interest in virtual crimes and have established a new department to regulate cryptocurrencies and combat crimes (Malak, L. A, 2021). They have partnered with the University of Nicosia to deliver training for the employees in blockchain and virtual law enforcement which includes matters such as monitoring transactions, conducting cryptocurrency investigations, virtual fraud, and proactive approaches to virtual crimes.

2. 4.7 PESTLE Analysis of Dubai Police Strategy

A PESTLE analysis was done by Dubai Police Future Foresight Center (2023), explaining the various factors on why it is crucial for Dubai Police to develop a new strategy to counter virtual crimes. In summary, the political reasons are widespread of illegal goods and services, human trafficking, expansion of organized crimes, national security threats, widespread cross borders crimes, etc. The economic reasons are the introduction of UAE Crypto-currency and Blockchain Strategy, the new ways of investment, virtual and physical business hubs, the introduction of new kinds of financial and economic crimes and violations, international partnerships, private and Government sectors collaboration, limited human resources, automation, and robots approach, etc. Socially, the wave of new cultures and norms by the immigrants have changed Dubai over the years, and this goes hand in hand with the influence of advanced technologies and new expectations such as remote working, dress codes, etc. Technological advancement is also a major factor in the reason why Dubai is interested in building a solid system to combat virtual crimes, especially with the announcement of Dubai Virtual Commercial City, Neuralink, virtual employees, autonomous vehicles, and more. Legally, the Dubai Government is currently reviewing different policies for the virtual world in order to support the law enforcement system and to have a clear path for the police force to follow when investigating and handling a virtual case. Environmentally, Dubai Police is looking into contributing to reducing carbon dioxide by reducing the trips to Dubai Police Stations to file a new case.

2. 5. Alignments with different governmental strategies

2. 5.1 Alignment with Dubai Strategy 2021

Dubai Virtual Commercial City is directly and indirectly linked to other governmental strategies, as shown by The Official Portal of the UAE government (n.d.), such as Smart Dubai Strategy 2021, which aims to create a smart ecosystem to empower Dubai to be the smartest and most technologically advanced city in the world with three main goals which are customer satisfaction, economic growth, and resource and infrastructure resilience. Dubai Virtual Commercial City, with its initiatives and goals, will contribute to the legacy of this strategy as it

is a platform that will attract more business opportunities and investors; various innovative products, services, and other resources will be available for customers and the virtual city is built to create strong, resilient, economic infrastructure for Dubai.

2. 5.2 Alignment with Dubai Blockchain Strategy

Dubai Virtual Commercial City is also connected with the Dubai Blockchain Strategy, which aims to make Dubai the first city to be powered by blockchain technology. This goes hand in hand with the Dubai VCC's ambition and goals as it will contribute to the implementation of creating a more secure, monitored, and effective virtual digital economy.

2. 5.3 Alignment with Dubai Economic Agenda (D33)

Moreover, it is also connected to Dubai Future Agenda and Dubai Economic Agenda (D33), as mentioned previously, as it aims to double the market size and Dubai Economy by 2033 with the usage of innovation and technology, Dubai VCC will contribute to the Dubai Economic Agenda by opening various opportunities for digital business and services. Dubai Virtual Commercial City is also linked to the UAE's Strategy for Artificial Intelligence as the strategy outlines the UAE government's plans to enhance the country's AI capabilities, adapt new AI-based businesses and services, and encourage the use of AI across various sectors, including healthcare, transportation, and Finance, freelancing, etc. All these services can be accommodated and operated through Dubai VCC.

2. 5.4 Alignment with UAE Fourth Industrial Revolution (4IR) strategy

Dubai VCC is also linked to UAE Fourth Industrial Revolution (4IR) strategy in various ways. The strategy includes the integration of advanced technologies such as Artificial Intelligence, the Internet of Things, 5G network, Biometric Security, Data Analysis, Blockchain software, and many other technologies in order to

change and positively impact our lives potentially, and it aims to position the UAE as a leading country in technological transformation. This strategy and tools are implemented and matured well, it will enhance the virtual residents' experience in Dubai VCC, and it will create a technological revolution characterized by the integration of advanced technologies, such as artificial intelligence (AI), the Internet of Things (IoT), and 5G networks, into various industries and sectors. The 4IR has the potential to change the way we live dramatically, work, and interact with each other, and the UAE is positioning itself as a leader in this technological transformation. The 4IR strategy aims to transform the UAE into a smart, sustainable, and interconnected society where technology is used to enhance the quality of Life and create a supportive and secure ecosystem for the emergence of the virtual economy.

2. 6. Main Takeaways

- Virtual crimes are not taken as seriously as physical crimes. In many scenarios, most of the cases get dismissed.
- The rules and regulations in the virtual world are very vague, and various questionable acts fall under the "Gray area”
- One of the crucial challenges facing the virtual world is a huge international jurisdiction difference depending on the cultural differences in defining the gravity of the offense and other crimes.
- Web-3 with its characteristics disable virtual police operations.
- There is no clear international cooperation to defeat virtual crimes.

2. 7. Source of Data

The data collected in this research paper are all authenticated. All of the resources related to international policing, virtual crimes, and case studies are based on academic journals. Dubai Police-related matters are based on internal resources or their website. Resources relevant to Dubai Virtual Commercial City and the Governmental strategies are all collected from Governmental websites or authenticated local newspapers.

Chapter 3 - Research Methodology

3. 1.1 Methodology

Several methodologies used in aim is to answer the research questions: 1) How will the Dubai police need to adapt their organizational structure and operations to effectively police the Dubai Virtual Commercial City in the future? 2) How will regulations and policies need to evolve to effectively police virtual commercial cities, and what challenges will this pose to the Dubai police? 3) How will crimes be dealt with in the virtual world and what challenges will this pose to the Dubai police? The uniqueness of this research paper is that it is future-driven. Therefore, we will rely on collecting qualitative data answer my research question, "How the future of the Dubai Virtual Commercial City reshape the Policing sector?".

The primary tools that will be included are system thinking to understand virtual policing as a system with different practices to better plan for challenges and obstacles of the virtual crimes and virtual regulation, and the second tool used is scenario planning to experiment with varying uncertainties with the Dubai Virtual Commercial City and road mapping to suggest new kind of ways to design and integrate the different stages of policing in the virtual world, objectives and measure of success.

Moreover, the secondary methods which are included in this research are a literature review to be knowledgeable of the background information and history of the virtual cities, regulations, crimes, and virtual police, and lastly, trends analysis to explore different scenarios and trends of the Dubai VCC and expose potential challenges and opportunities in the virtual policing, Lastly, Causal layered analysis and chaos theory which are other tools to use to understand the underlying causes of the virtual crimes to identify potential solutions.

3. 1.2 Limitations of the Study

There is various limitation in this study such as time constraints, no available data of the Dubai Virtual Commercial City nor there are representatives of the project to reach out to them for an interview and insights. In addition to unclear regulations of the virtual crimes which could enhance our findings and results.

Chapter 4 - Project Description

Findings and Analysis

4. 1.1 Scenario Planning

The outcomes and conclusions of the exercise in scenario planning provide insightful information about the future of the Dubai Virtual Commercial City and how it will affect the police industry. A standard structure for investigating potential futures and resolving the uncertainties and obstacles outlined in this study has been

offered through scenario planning, a strategic foresight tool. A set of probable alternative futures has been created through an extensive procedure that involves identifying important uncertainties, creating scenarios, and examining their implications. These hypothetical situations illustrate several possible directions, motives, and notions concerning the growth of the commercial city and the role of the police within it.

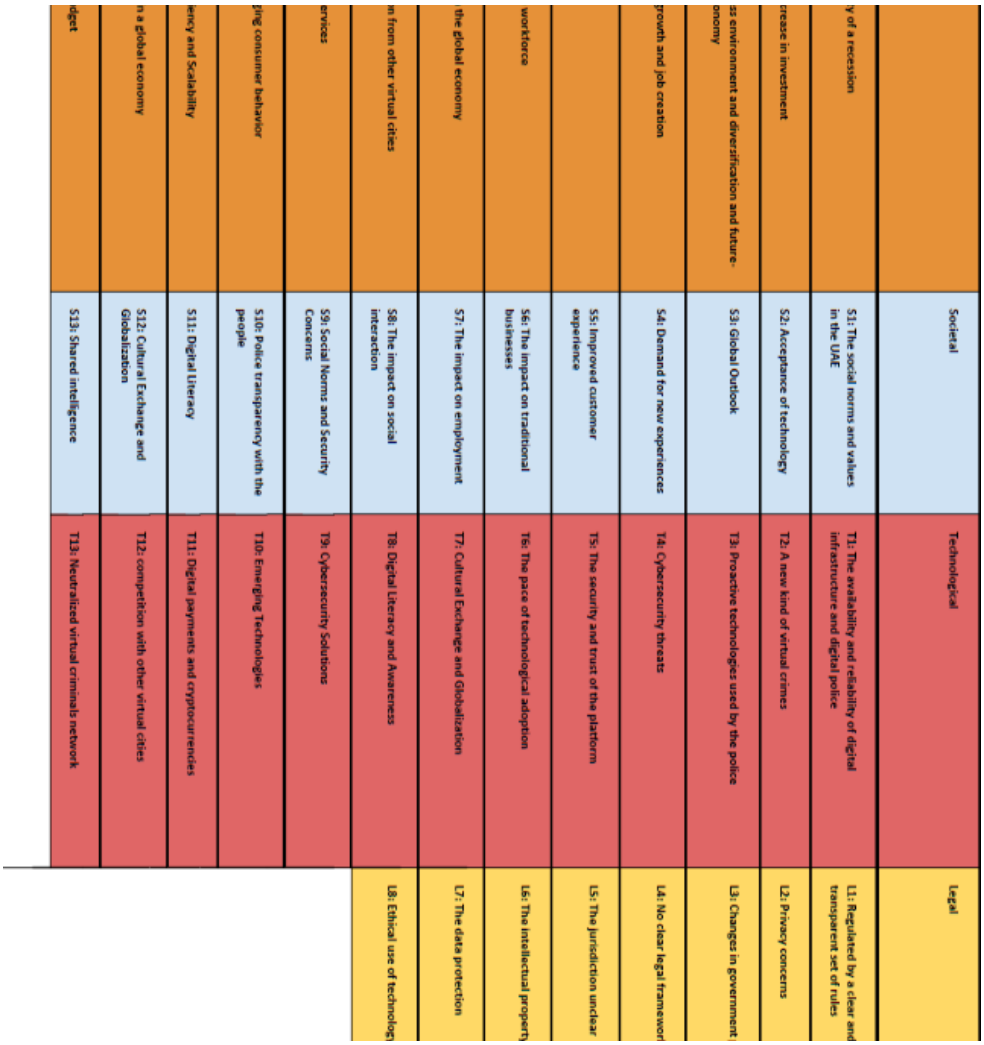

Figure 1 (The drivers of the Dubai VCC - Colour & Number Coded)

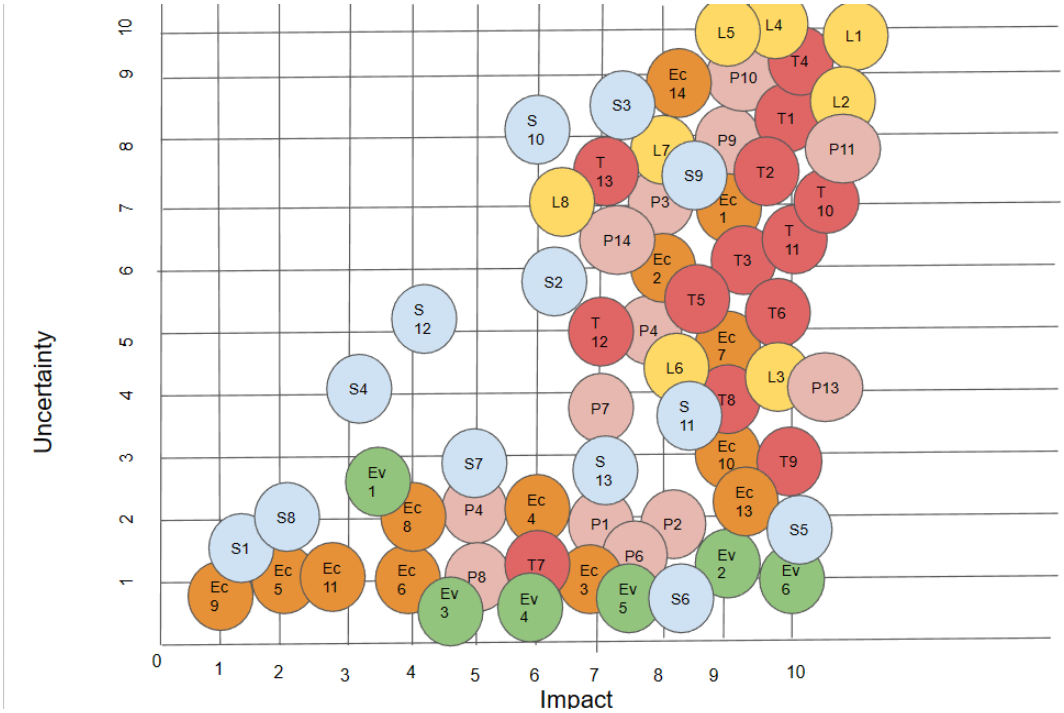

Figure 2 (Matrix of uncertainty and impact)

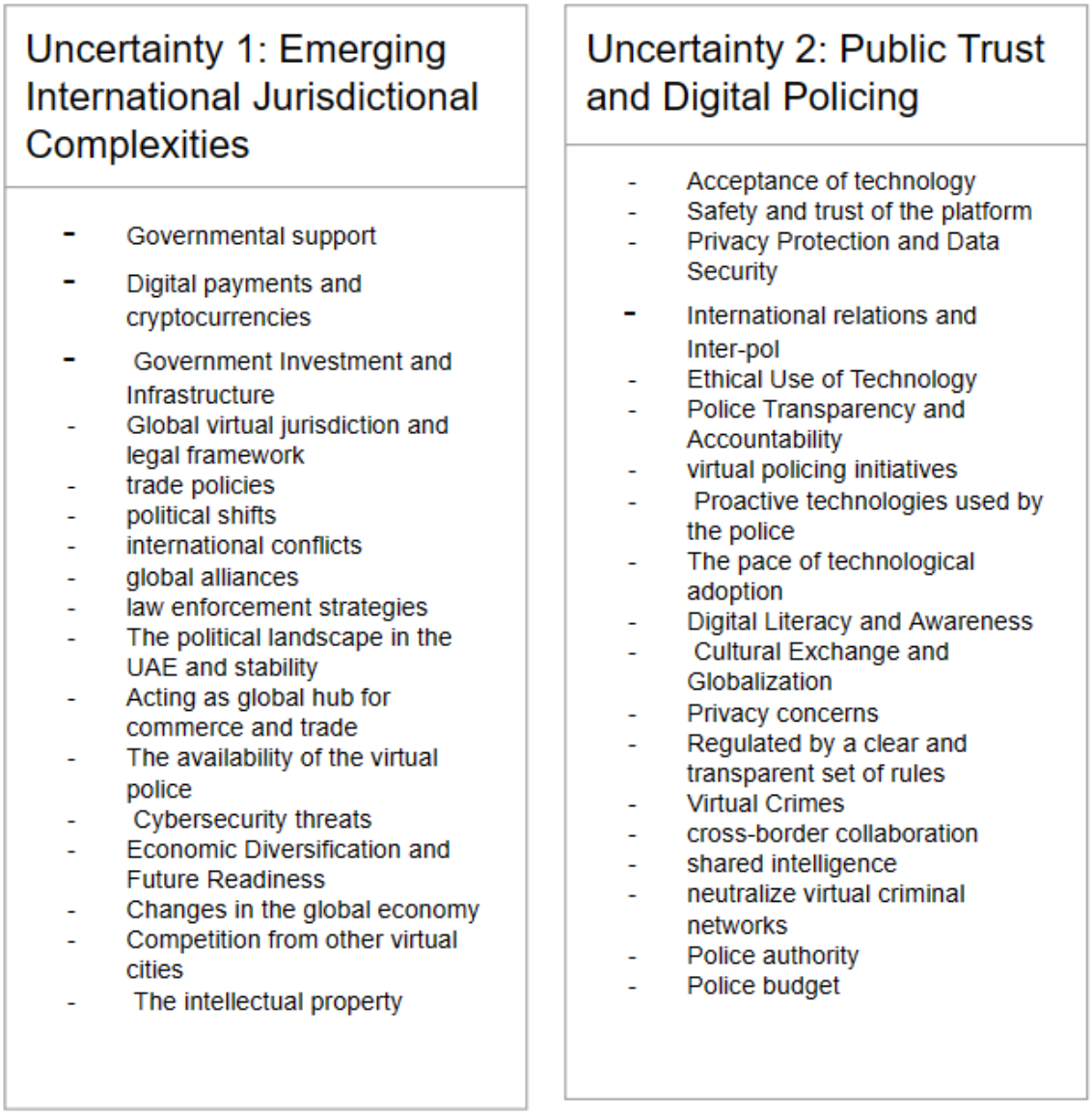

Figure 3 (Driving forces merging into 2 main uncertainties)

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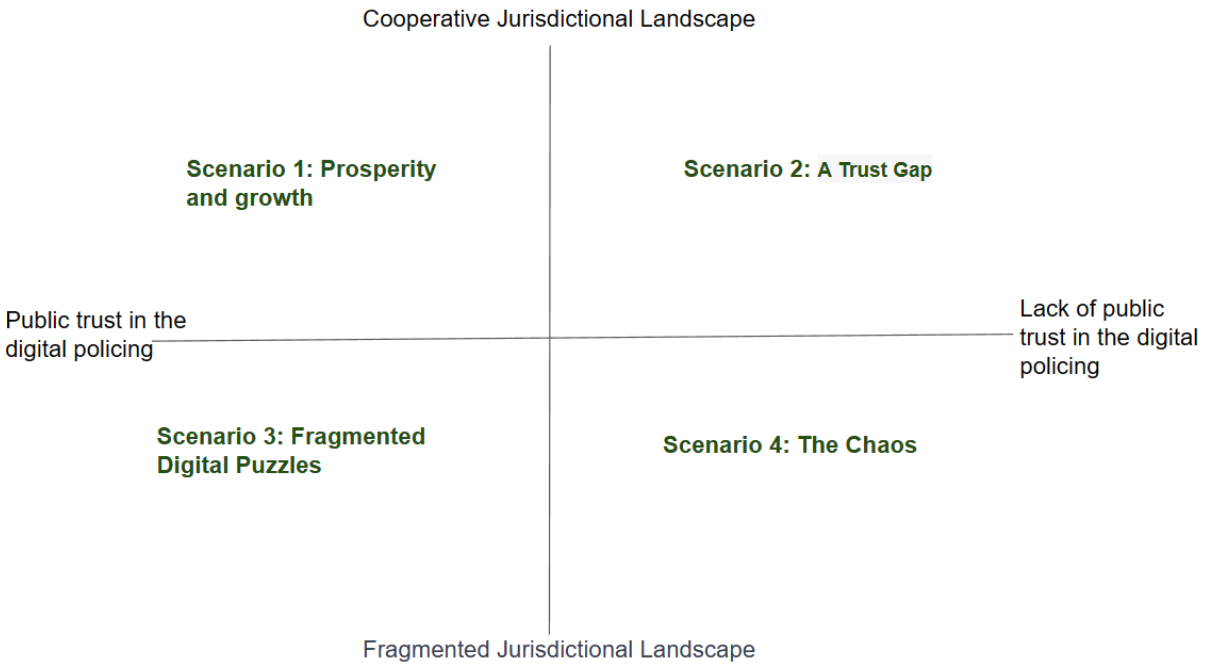

Figure 4 (2x2 matrix of the uncertainties in different scenarios)

Scenario 1: Prosperity and growth

In this future, the Dubai Virtual Commercial City thrives on a collaborative legal environment and enjoys high levels of trust from the public in digital law enforcement. Recognizing the significance of a safe virtual commerce ecosystem for economic growth, the government offers unflinching support. The financial environment has changed due to the growing use of cryptocurrencies and digital payments, which have made it possible for transactions to take place easily in the virtual city. Government expenditures on infrastructure and cutting-edge technology have created a strong framework for digital policing. The establishment of a worldwide virtual jurisdiction and legal framework has made cross-border activities more effective and increased international cooperation possible. Trade policies encourage the expansion of the online retail market, attracting companies and business owners from all over the world. Worldwide partnerships for cybersecurity and law enforcement strategies successfully eliminate virtual criminal networks despite occasional political shifts and crises. The UAE's political environment is still secure, and the nation serves as a major international center for business and trade. With proactive resources at their disposal, the virtual police are prepared to act quickly in response to new cyber threats and virtual crimes. Cybersecurity is given top priority in order to maintain the virtual commercial city's security and reliability. Data security and privacy protection are given the highest importance, which promotes public trust in digital policing activities. International cooperation and intelligence sharing are made possible through international contacts, notably through Interpol, which strengthens efforts to combat cybercrime. The virtual commercial city runs under a set of regulations that are visible and explicit and are controlled to uphold honesty and fair competition. The protection of intellectual property rights fosters innovation and creativity within the ecosystem of virtual commerce. The success of the virtual commercial city is fueled by the public's adoption of technology and digital literacy. Globalization and cultural interaction enhance the environment even more by drawing in different skills and encouraging innovation. Through the ethical use of technology and open and transparent business practices, public privacy concerns are effectively handled, fostering trust in the efforts of virtual policing. With proper funding allocation, the virtual police force uses proactive technology to stay ahead of cyber threats and maintain a secure environment. The community and the virtual police are given more authority to manage a safe virtual commercial city due to the rapid acceptance of new technologies within the police forces and the ongoing improvement of digital literacy and training. The Dubai Virtual Commercial City has established itself as a leader in the international economy through economic diversification and future-ready policies. Although there is competition from other virtual cities, the city stands apart by having a unique combination of elements that includes strong cybersecurity safeguards and a reliable digital policing architecture. In conclusion, this safe, profitable, and reliable environment was made possible by the coordinated efforts of international stakeholders and efficient law enforcement tactics.

Figure 5 (Scenario 1)

(Appendix 6: Scenario 1: Challenges, opportunities and action plan)

Scenario 1: Prosperity and growth

Challenges	Opportunities	Action Plan
- Jurisdictional Complexity - Competing Virtual Cities - Public Perception and Acceptance - Global reach - Innovation	- Enhanced Global Collaboration - Economic Growth and Investment - Strengthened International Relations - the development of standardized legal frameworks	- Establish Strong Partnerships and Collaboration - Invest in Advanced Technologies and Expertise - Establish clear and transparent guidelines and regulations regarding data collection - Develop proactive communication strategies to educate the public about the benefits of digital policing and the measures in place to protect their privacy and security. - Continuously assess and enhance the virtual commercial city's cybersecurity infrastructure to stay ahead of emerging threats - Continuously assess and enhance the virtual commercial city's cybersecurity infrastructure to stay ahead of emerging threats - The UAE can reach a global audience by promoting the virtual commercial city to businesses and consumers around the world. The government can also work with international partners to develop standards and regulations for the virtual commercial city.

Figure 6 (Scenario 1: Challenges, opportunities and action plan)

Scenario 2: A Trust Gap

In a future scenario characterized by a cooperative jurisdictional landscape but a lack of public trust in digital policing, several factors shape the landscape of the Dubai Virtual Commercial City. Despite significant governmental support and substantial investment in infrastructure, the lack of public trust in digital policing poses a significant challenge. The city embraces digital payments and cryptocurrencies, but the skepticism surrounding the security and privacy of these transactions hinders their widespread adoption. While a global virtual jurisdiction and legal framework exist, trade policies, political shifts, and international conflicts create uncertainties and impact the stability of the virtual commercial city.

As the UAE seeks to position itself as a global hub for commerce and trade, the availability of the virtual police becomes critical. However, public skepticism towards their effectiveness and transparency limits their impact. Heightened cybersecurity threats further erode public trust, leading to concerns about the safety and trustworthiness of the virtual commerce platform. Privacy protection and data security are paramount concerns, requiring stringent regulations and robust measures to address public anxieties.

International relations and collaboration, particularly with organizations like Interpol, play a pivotal role in combating virtual crimes. However, the lack of public trust in digital policing hampers effective cross-border collaboration and shared intelligence initiatives, making it challenging to neutralize virtual criminal networks effectively.

Cultural exchange and globalization drive the need for an inclusive and diverse virtual commercial city. However, privacy concerns surrounding data collection and the use of technology pose obstacles to achieving this goal. The city must navigate these challenges while ensuring that it is regulated by a clear and transparent set of rules that protect individuals' rights and interests.

In this scenario, the virtual crimes landscape presents continuous challenges to the police authority over the virtual residents. Limited public trust and budgetary constraints require innovative approaches to address virtual crimes effectively. Striking a balance between addressing privacy concerns, bolstering public trust, and combatting virtual crimes becomes a critical imperative for the future of the Dubai Virtual Commercial City.

Figure 7 (Scenario 2)

(Appendix 8: Scenario 2: Challenges, opportunities and action plan)

Scenario 2: A Trust Gap

Challenges	Opportunities	Action Plan
- Budgetary Constraints - Lack of police training on combating virtual crimes - Difficulty adapting to the technological advancement - Evolving cybersecurity threats - Unability and unreadiness to cover the virtual world - Unclear virtual police strategy - Lack of public trust - High crimes rate - Widespread of illicit activities and organized crimes - Privacy concerns	- Use a proactive technology in the police force - Enhance law enforcement strategies - Enhance transparency - Solidifying the city's position as a leading digital commerce destination	- Benchmarking with other virtual worlds/cities - Develop a comprehensive communication strategy to educate the public about digital policing initiatives - Enhance transparency by regularly sharing information on the virtual police's activities, successes, and challenges through public reports, media engagements, and online platforms. - Engage in joint training programs, information-sharing agreements, and mutual assistance frameworks with international law enforcement agencies to enhance cross-border cooperation in combating virtual crimes. - Provide comprehensive training programs for law enforcement personnel on digital forensics, cybercrime investigation techniques, and emerging technologies. - Establish public-private partnerships to enhance cybersecurity resilience, share threat intelligence, and develop joint initiatives to address emerging challenges.

Figure 8 (Scenario 2: Challenges, opportunities and action plan)

Scenario 3: Fragmented Digital Puzzles

In a future scenario characterized by a fragmented jurisdictional landscape but a high level of public trust in digital policing, the Dubai Virtual Commercial City encounters a formidable challenge in creating a unified international jurisdictions framework. The diverse legal systems and varying regulatory environments across different countries pose significant obstacles to seamless cooperation in addressing international and virtual crimes. Despite the difficulties, the city is committed to driving global collaboration and fostering consensus among nations. Through diplomatic negotiations, strategic alliances, and international partnerships, the Dubai Virtual Commercial City strives to establish a harmonized legal framework that encourages countries to abide by shared laws and regulations for effective handling of virtual crimes. This complex endeavor requires extensive efforts to bridge differences in trade policies, navigate political shifts, and resolve conflicts among nations. The city's position as a global hub for commerce and trade, coupled with its stable political landscape and strong governmental support, provides a conducive platform for advocating for international cooperation. By actively engaging with international bodies such as Interpol and promoting cross-border collaboration, the city aims to overcome jurisdictional complexities and streamline efforts in neutralizing virtual criminal networks. The Dubai Virtual Commercial City recognizes the importance of striking a balance between protecting privacy and data security and implementing measures that promote effective law enforcement. The development of an international jurisdictions framework will require continuous dialogue, diplomacy, and the consensus of multiple stakeholders to ensure the smooth operation of virtual commerce and the enforcement of laws and regulations across borders. This scenario underscores the ambitious pursuit of creating an inclusive and comprehensive global legal framework, ultimately enhancing the city's position as a leader in virtual policing and setting a precedent for international collaboration in the digital age.

Figure 9 (Scenario 3)

Scenario 3: Fragmented Digital Puzzles

Challenges	Opportunities	Action Plan
- Overcoming the diversity of legal systems and regulatory environments across countries - Political shifts, international conflicts, and varying political interests among nations can hinder the development of a unified international framework. - Ensuring that countries comply with the framework and enforce its provisions uniformly poses challenges - The process of aligning legal systems, definitions, and standards related to virtual crimes across different jurisdictions is complex	- The establishment of an international jurisdictions framework - unified framework would streamline the allocation of resources by enabling countries to pool their expertise, technologies, and financial resources. - A harmonized legal framework would provide clarity and consistency in laws and regulations related to virtual crime. - The process of developing an international jurisdictions framework would foster stronger global alliances among countries to address common challenges and protect the integrity of the VCC landscape.	- Establish a Global Task Force (The task force will be responsible for coordinating efforts, setting objectives, and developing a roadmap for creating the international jurisdictions framework) - Conduct a comprehensive analysis of the legal systems and regulatory environments of participating countries to identify commonalities, differences, and areas of convergence. - Initiate diplomatic negotiations and dialogue among participating countries to build consensus on key aspects of the framework. - Develop model legislation and standards to ensure consistency and clarity in defining offenses, penalties, and legal procedures across borders - Strengthen collaboration with Interpol and other international law enforcement agencies to facilitate information sharing, joint investigations, and coordinated efforts in combating virtual crimes. - Provide training on virtual policing techniques, digital evidence collection, and international cooperation.

Figure 10 (Scenario 3: Challenges, opportunities and action plan)

Scenario 4: The Chaos

In a future scenario marked by a fragmented jurisdictional landscape and a lack of public trust in digital policing, the Dubai Virtual Commercial City faces formidable challenges in combating organized crimes and other virtual crimes, as well as addressing cybersecurity threats. With disparate governmental support, trade policies, and political shifts, the coordination of law enforcement strategies becomes arduous, hampering efforts to combat sophisticated organized criminal networks operating in the virtual realm. The absence of a unified global virtual jurisdiction and legal framework complicates international cooperation and hinders the extradition of criminals across borders. This fragmented landscape increases the risk of jurisdictional gaps that can be exploited by cybercriminals to evade prosecution.Moreover, the Dubai Virtual Commercial City must contend with the ever-evolving and sophisticated cybersecurity threats that pose significant risks to its infrastructure, data, and the trust of its users. As digital payments and cryptocurrencies gain prominence, the city becomes an attractive target for cybercriminals seeking to exploit vulnerabilities and conduct financial fraud or theft. The challenge lies in establishing robust cybersecurity measures, proactive defense systems, and effective incident response mechanisms to safeguard the integrity and security of the virtual commercial city.

Additionally, the city faces risks related to economic diversification and future readiness. As competition from other virtual cities intensifies, the Dubai Virtual Commercial City must stay agile and innovative to maintain its position as a global hub for commerce and trade. Protecting intellectual property becomes paramount, as the city's success relies on fostering an environment that encourages innovation and respects copyright and patent rights. Balancing the acceptance of technology with ensuring safety and trust on the platform presents a delicate challenge, as the lack of public trust in digital policing can hinder user adoption and impede the growth of the virtual commercial city. Furthermore, addressing privacy concerns and data security is crucial to build public trust and maintain a competitive edge. Striking a balance between privacy protection and effective law enforcement is a delicate task, requiring the implementation of robust privacy policies, encryption measures, and data breach prevention protocols. Failure to address these concerns could result in reputational damage and loss of user confidence.

Figure 11 (Scenario 4)

Scenario 4: The Chaos

Challenges	Opportunities	Action Plan
- The fragmented jurisdictional landscape poses a significant challenge in coordinating efforts to combat virtual crimes. - The lack of public trust in digital policing undermines the adoption and acceptance of technology - Difficulty in anticipating and mitigating emerging threats while maintaining a robust and secure virtual environment for businesses and users - Regulatory complexities - Competition from other virtual cities	- The fragmented jurisdictional landscape can foster collaboration among different jurisdictions, leading to the sharing of best practices and expertise in combating virtual crimes. - With a lack of public trust in digital policing, there is an opportunity to prioritize privacy protection and data security. - The Dubai Virtual Commercial City can leverage its position as a global hub for commerce and trade to forge partnerships with international organizations, law enforcement agencies, and technology companies.	- Foster diplomatic relations and establish bilateral agreements with key countries to facilitate information sharing and joint investigations. - Establish a dedicated task force or committee to coordinate efforts, share intelligence, and develop common strategies and protocols. - Implement transparency measures, such as public reporting of cybercrime statistics, enforcement actions, and outcomes. - Develop a public awareness campaign to educate users about the virtual commercial city's commitment to privacy, data security, and responsible digital policing. - Conduct regular cybersecurity assessments and audits to identify vulnerabilities and take prompt remedial actions. - Invest in research and development to stay ahead of emerging cyber threats and technological advancements in virtual crime. - Foster partnerships with technology companies, academic institutions, and startups to drive innovation in digital policing tools, proactive technologies, and cybersecurity solutions. - Encourage continuous professional development and knowledge-sharing among police officers to stay updated with the latest trends and techniques in virtual crime investigation. - Encourage private sector entities within the virtual commercial city to adhere to cybersecurity standards, privacy protection guidelines, and ethical use of technology.

Figure 12 (Scenario 4: Challenges, opportunities, and action plan)

4. 1.2 Virtual Crime as Complex Adaptive System

Due to their innate traits, virtual crimes might be considered a Complex Adaptive System (CAS). According to the CAS theory, emergent behaviour in complex systems, including virtual crimes, results from the interactions and modifications of independent system components. The following features show how virtual crimes correspond with CAS tenets:

Self-Stabilization: Virtual crimes frequently self-stabilize as a result of environmental change and progressing defences. Criminals react by changing their methods, taking advantage of fresh weaknesses, or changing their behaviour to avoid being caught and prosecuted while law enforcement agencies and cybersecurity experts create measures to counteract virtual crimes. A dynamic equilibrium is created inside the system as a result of the constant interaction and adjustment between law enforcement and criminals.

Virtual crimes display intentional behaviour that is motivated by the intents and motives of the offenders. When committing crimes like hacking, fraud, identity theft, or data breaches, criminals have certain goals in mind,

such as monetary gain, political upheaval, or personal fulfilment. The intentional character of virtual crimes sets them apart from unintentional or random happenings.

Virtual criminals are capable of altering their surroundings and adapting their behaviour in order to take advantage of weaknesses or get around security measures. They regularly research and evaluate the virtual environment, looking for flaws in persons, networks, or systems and using cutting-edge tactics to sabotage, influence, or avoid discovery. The adaptability and endurance of virtual crimes are facilitated by this capacity to change strategy.

Self-Replication, Self-Maintenance, and Self-Repair: Virtual crimes have the ability to replicate themselves, keep themselves up, and repair themselves. Criminals create and spread malware, phishing tricks, and ransomware that may spread to and attack numerous computers on their own. These harmful programmes have the ability to sustain themselves by upgrading and developing their functions to avoid detection and take advantage of fresh vulnerabilities. As soon as security measures or countermeasures are put in place, criminals modify their techniques to fix their systems and carry through their illegal operations.

Self-Organization: Virtual crimes show self-organization as criminal networks work together, coordinate their efforts, and set up shop to accomplish their goals. Utilising scattered networks, clandestine forums, and encrypted communication channels, they build intricate ecosystems of knowledge, resources, and technologies. It is difficult to shut down criminal activities because of the ability of these self-organized networks allowing criminals to communicate information, assign jobs, and coordinate responses to law enforcement efforts.

4. 1.3 Crime System & Theory of Chaos

From the perspective of chaos theory, virtual crimes are comparable to organised crime in that they are complex, non-linear systems with the potential to have large-scale effects. Cyberfraud, identity theft, and other virtual crimes can cross state or regional borders and involve offenders from different locations. Because of how interconnected the digital world is, criminal activity can spread to different jurisdictions. Given that the dangers they encounter might come from other places and have broad repercussions, this complexity and uncertainty provide difficulties for local police forces.

Virtual crimes show traits of self-stabilization, much like organised crime. In a constantly changing digital environment, criminals modify their methods and take advantage of weaknesses. They employ sophisticated strategies, conceal their identities, and collaborate in global networks. Virtually all crimes can be committed by either individuals or organised groups, with the latter needing more time for planning, a more organised workforce, and division of labour.

Law enforcement may find it challenging to identify the real criminals and track their actions due to the complexity of the structures of virtual criminal organisations. Like in organized crime, virtual criminal groups employ strategies to protect themselves from accountability and conceal their transactions. Virtual criminals sometimes use money laundering, bribes, and the use of legal corporations to conceal their illicit activity.

Virtual crimes also show some signs of endurance and continuity. Just as in organized crime, there is often a generational aspect, where individuals raised within the world of virtual crimes may follow in their parents' footsteps. The allure of power, corruption, and financial gain drives the persistence and growth of virtual criminal networks.

The future of virtual crimes is still uncertain, as it is with any complicated system. Ongoing difficulties are caused by the development of technology and criminals' obstinate attempts to take advantage of newly discovered flaws. For law enforcement organisations to effectively combat virtual crimes, they must continually innovate their strategy, instruments, and partnerships. Police and law enforcement must be able to manoeuvre through the complex and constantly shifting virtual landscape in order to maintain the public's sense of security and to lessen the serious threat that virtual crimes pose.

In conclusion, virtual crimes embody chaos in the external system, just like organised crime does. Their complexity, worldwide reach, self-stabilizing traits, and potential for significant social effects foster a climate of perpetual worry and danger. The development of virtual crimes' technological sophistication and the capacity of law enforcement to foresee, stop, and address new threats will determine how they develop in the future. In the face of this complex and quickly changing criminal landscape, protecting civilians and reducing the havoc caused by virtual crimes require preemptive measures, coordination, and continual flexibility.

4. 1.4 The Influence Map

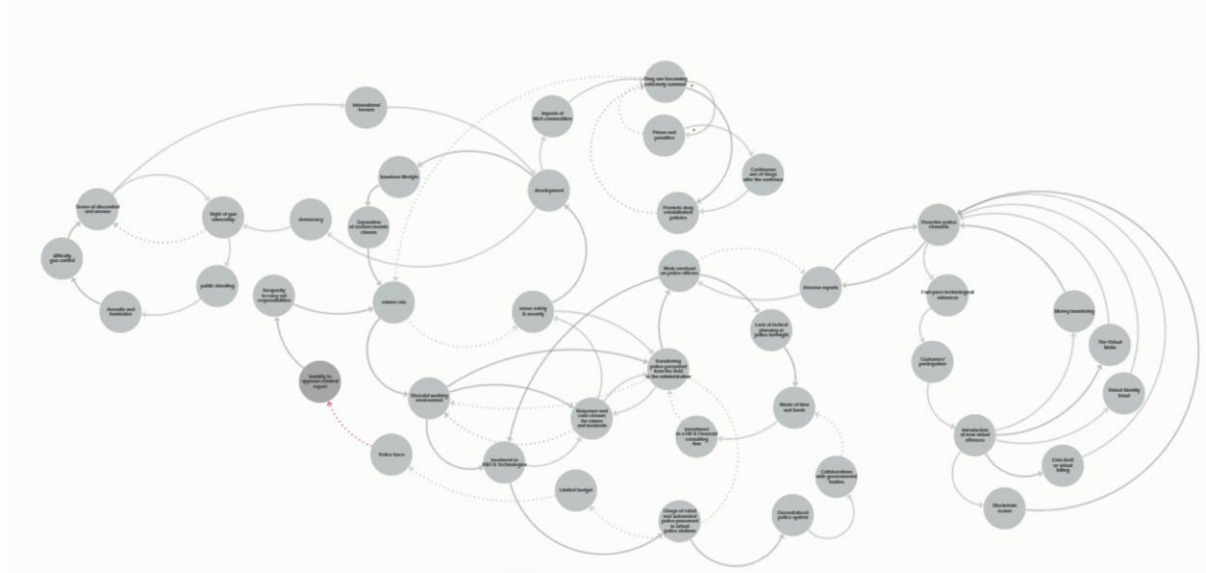

Figure 13 (The Influence Map)

The more developed the city is, the more likely there will be an import of illicit commodities. *Therefore more drug use becomes extremely common, the short-term fix is the increase in prison and penalties. However, this will not solve the issue in the long term as they tend to continuously use drugs after the sentence. Therefore the best long-term solution is to promote drug rehabilitation policies that will reduce the drug use becomes extremely. This will decrease the crimes rate and will increase the sense of safety and security in the region which will encourage the constant development, and more luxurious lifestyle, which will increase the separation of socioeconomic classes and will increase the crimes rate once again. There will be more stressful police environment and more investing in the R&D and* Technologies, therefore more usage of robot and automated police personnel in virtual police stations, and more decentralized police system with more collaborations with governmental bodies. Therefore, less waste of time and funds and more investment in a HR & Financial consulting firms and minimizing transferring police personnel from the administration to the field to safe guard other zones. Therefore, less organizational budget and more police force and less inability to approve criminal report and less incapacity to carry out responsibilities and duties, therefore; less crimes and less stressful police environment, and more time to invest in R&D and a higher response and case closure for crimes and incidents. This will cause more sense of safety and security, therefore more development, more

luxurious lifestyle, more separation of socioeconomic classes and more crimes rate, and more stressful police environment which will bring us back to more investment in the R&D which will increase the response and case closure for crimes and incidents but will put more work overload on police officers due to more receive reports and more proactive police channels due to the Fast-pace technological advances and high customers' participation, which will definitely cause more introduction of new virtual offences such as money laundering, where the customers will be more likely to use proactive police channels to raise their concerns which will increase the number of receiving report and the work overload even more. This will only make the police more inability to implement tactical planning or police foresight and will waste more waste of time and funds. Therefore, police will likely investment in a HR & Financial consulting firms to manage them and this will help to minimize transferring police personnel from the administration to the field and will increase the sense of safety and security once again. This will encourage the development and promote democratic views, and therefore, there is a chance it will increase the solution is right of gun ownership with the intention to create less sense of discomfort and unease; however, right of gun ownership will lead to more public shootings, more assaults and homicides, and more difficulty in gun control; therefore it will lead us back to the sense of discomfort and unease which will only cause international tension back at the development of the country.

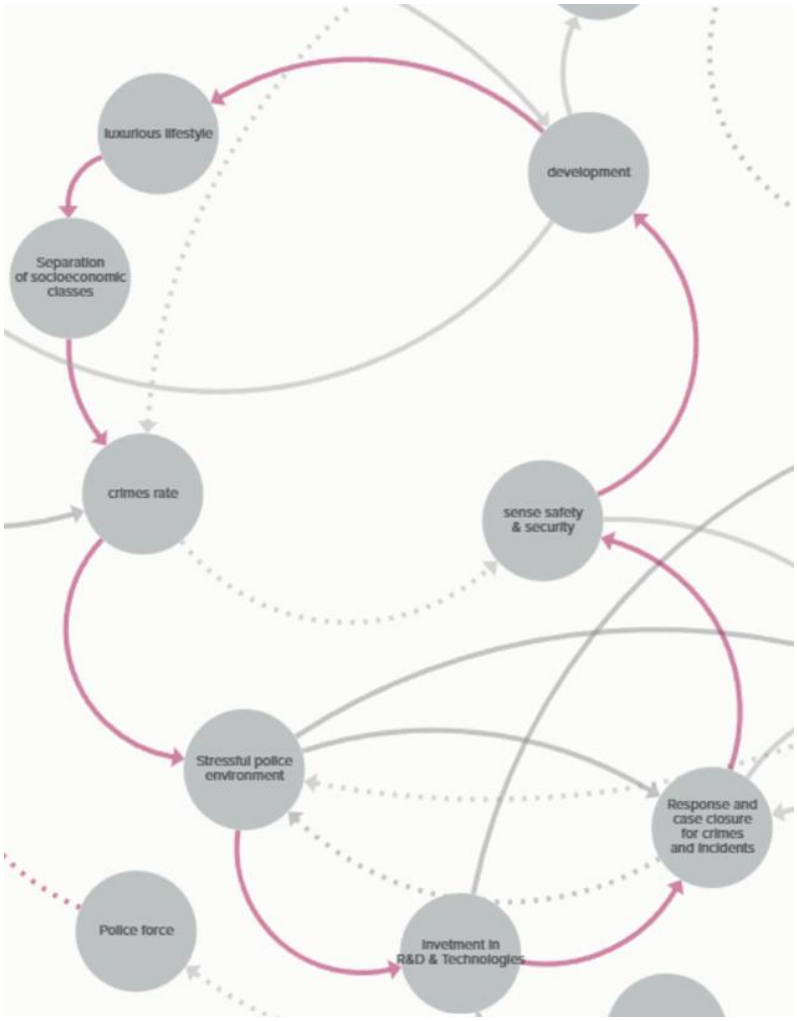

Figure 14 (Reinforcing loop #1)

The more luxurious lifestyle, the more separation of socioeconomic classes, the higher the crime rates, the more stressful police environment, therefore more reliance on R&D and technology which will lead us to high response and case closure for crimes and incidents, and more sense of safety and security, therefore, more development and progress, and more luxurious lifestyle.

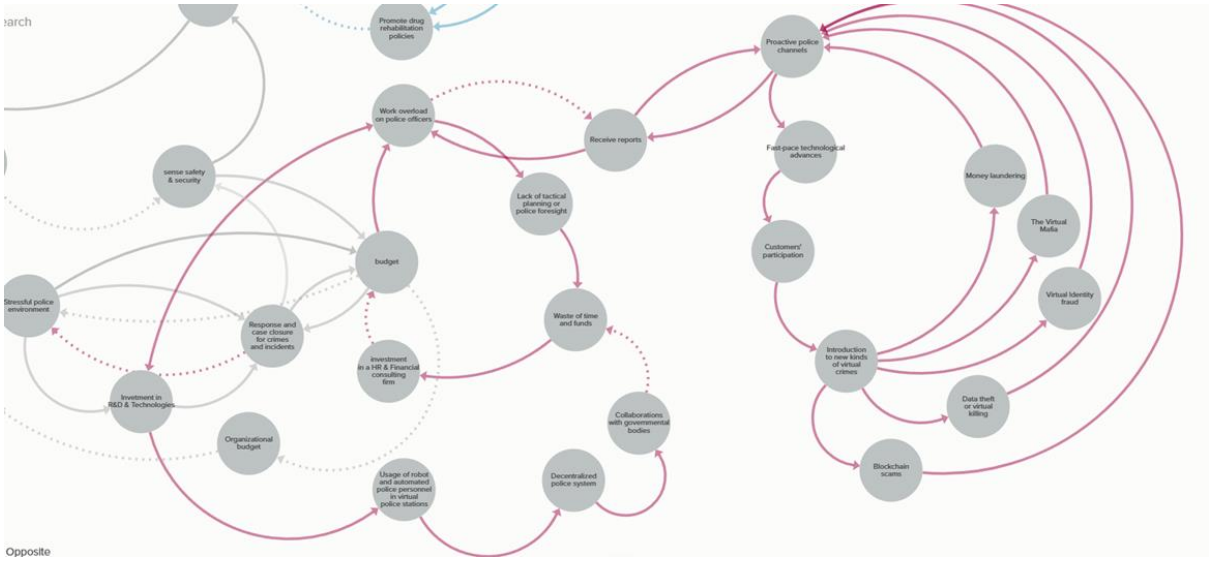

Figure 15 (Balancing loop #1)

The faster technological advancements leads to more customers participations, more introduction to new kinds of virtual crimes, therefore more (blockchain scams/Data theft or virtual killing, virtual identity fraud/virtual mafia/money laundering), the more proactive police channels, the more they receive reports, the more workload on the police officers. The more they will gravitate towards investment in R&D Technologies. Therefore more usage of robot and automated police personnels in the virtual police station, the more decentralized the police system will be with the more collaboration with governmental bodies, the less money and resources wastage, and more investment in Finance & HR Consultancy and less budget, and less workload on the employees and more receiving reports and more usage of these proactive police channels.

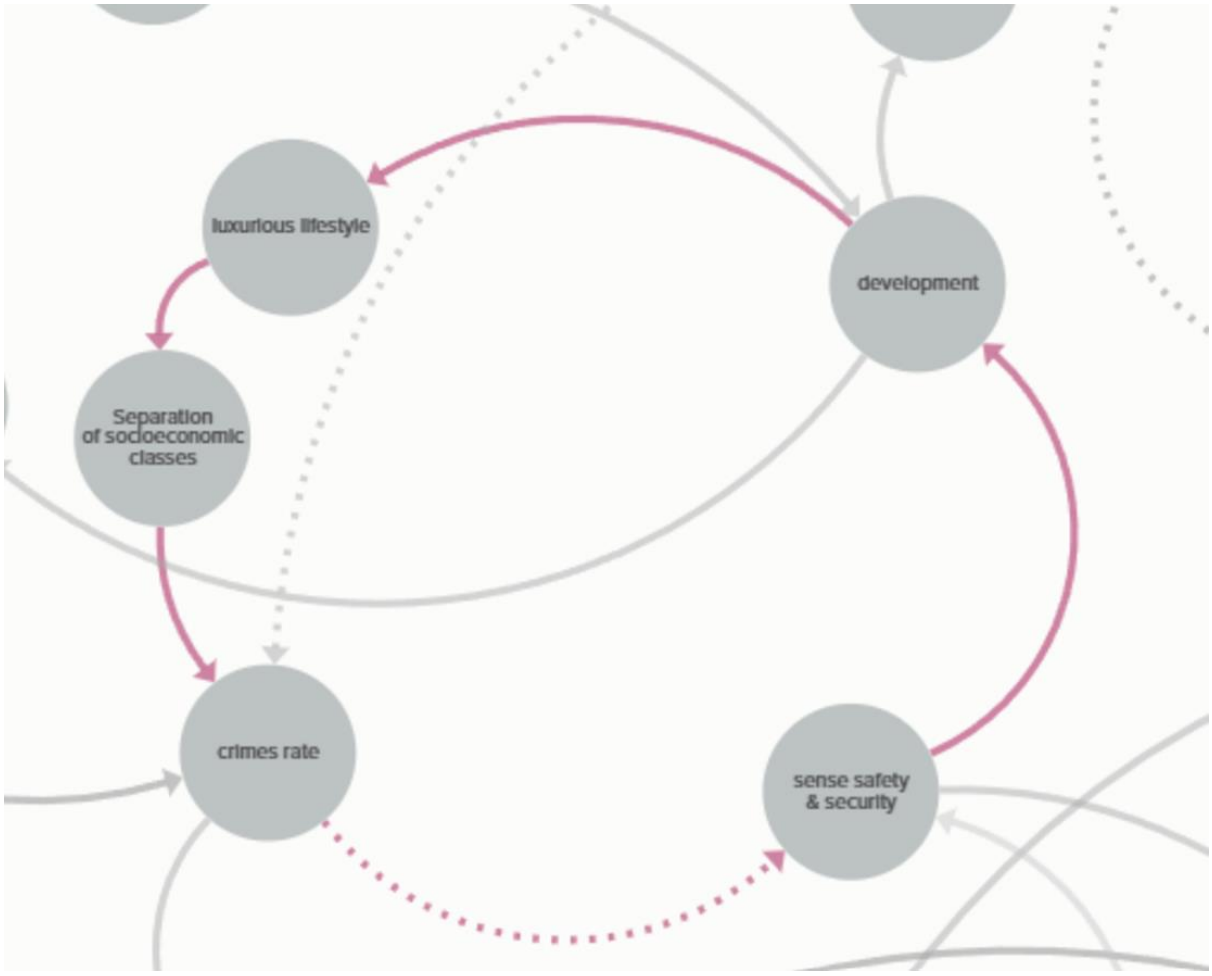

Figure 16 (Balancing loop #2)

More developed a city is, more luxurious lifestyle, therefore more separation of socioeconomic classes, which will lead to higher crimes rate, which will lead to a low sense of safety and security, which will slow the development of the society.

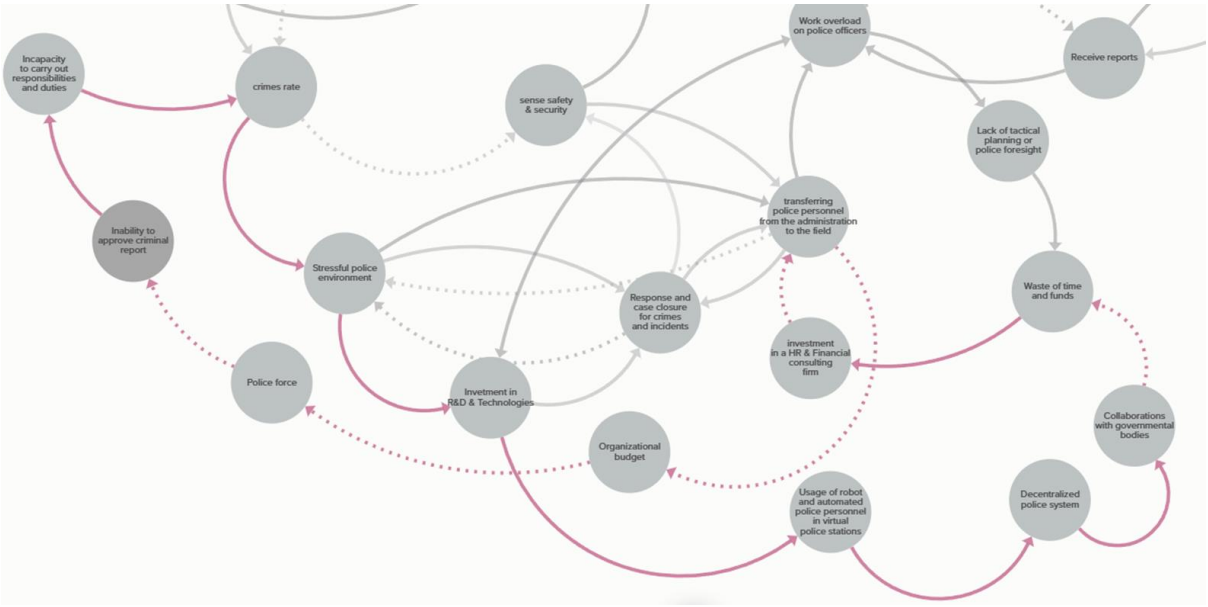

Figure 17 (Balancing loop #3)

More limited organizational budget with less police force, therefore, higher chance of inability to approve criminal report and more incapacity to carry out responsibilities and duties, therefore, high crime rate, and more stressful police environment, the police will most likely resolve to invest in R&D and technologies and more likely rely on the usage of robot and automated police personnel in the virtual police stations. Therefore, it will allow the decentralization of the police system and more collaboration between the governmental bodies, which will reduce time and funds wastage and will encourage more investment in HR and financial consulting firms which will reduce the transferring police personnel from the administration to the field, which will lower the organizational budget and will encourage hiring more police force which reduce the failure and inability to approve criminal reports.

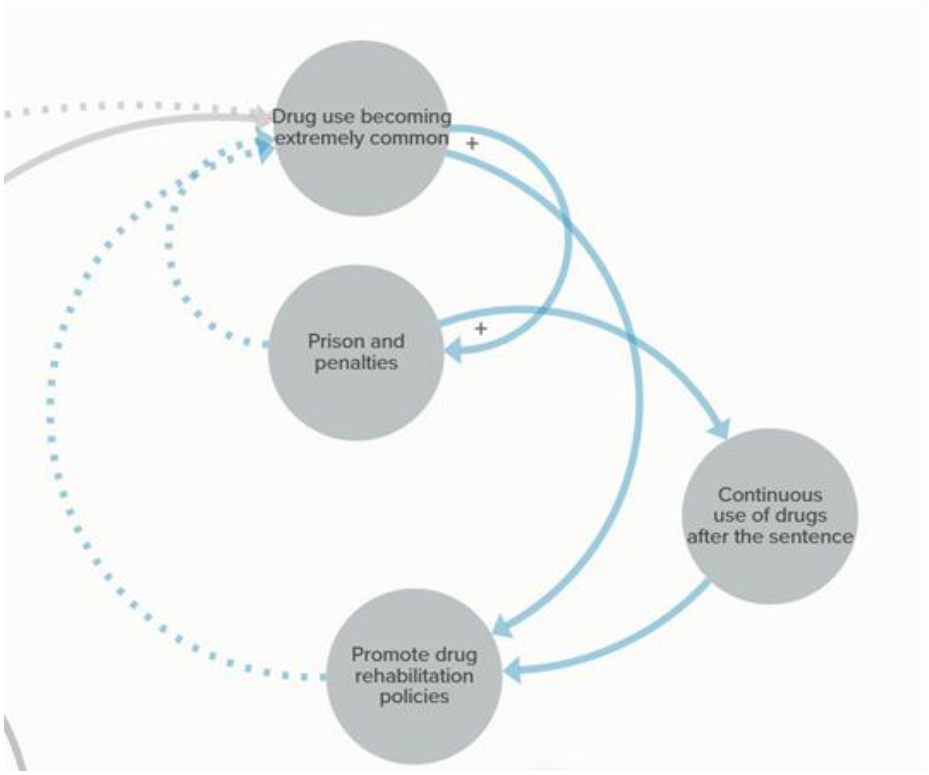

Figure 18 (Shifting the burden archetype)

The more drug use becomes extremely common, the short-term fix is the increase in prison and penalties. However, this will not solve the issue in the long term as there is a pattern of continuous use of drugs after the sentence. Therefore the best long-term solution is to promote drug rehabilitation policies that will reduce the extreme widespread of drugs use.

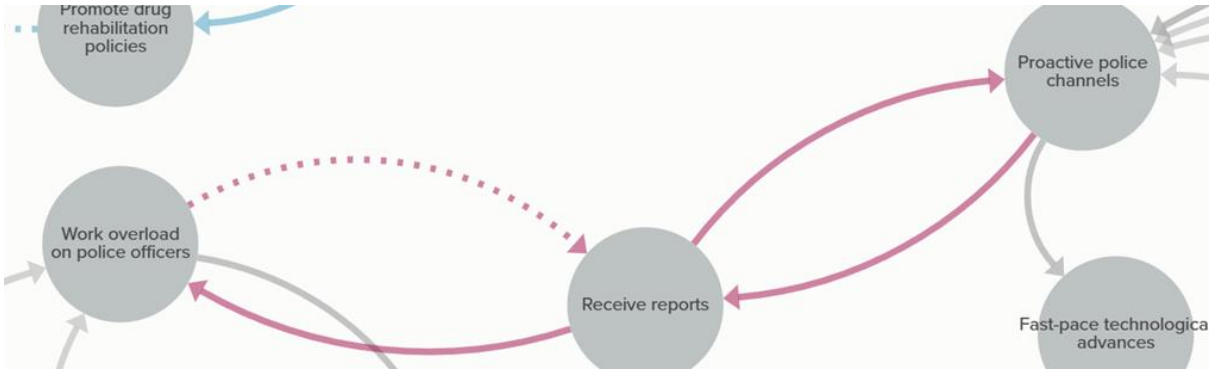

Figure 19 (Limit To Success Archetype)

The less work overload on police force, the more they are able to receive reports, therefore, more activation of the proactive police channels, which will increase the number of criminal reports, which will cause more work overload on the police force.

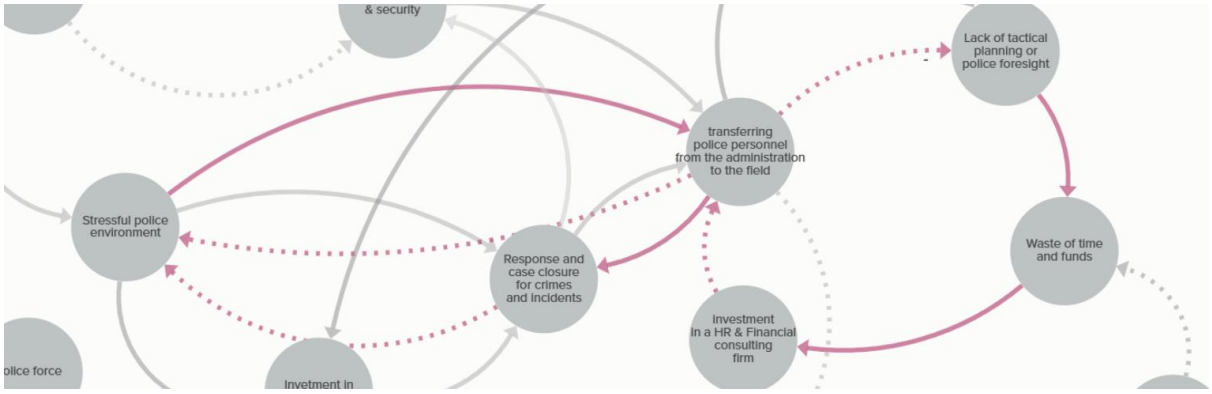

Figure 20 (Fixes The Fail Archetype #1)

The more stressful the police environment, the more likely they are going to transform their police personnel to be on the field, which will reduce the stressful police environment officers temporarily. However, as much as transforming processes continue, the unintended consequence is that the higher chance of lack of tactical planning and police foresight happening. Therefore, more time and funds waste. The solution is to invest in financial & HR consultancy firms, which will reduce the transferring process, therefore will increase their response to crime cases and will reduce the stressful police environment.

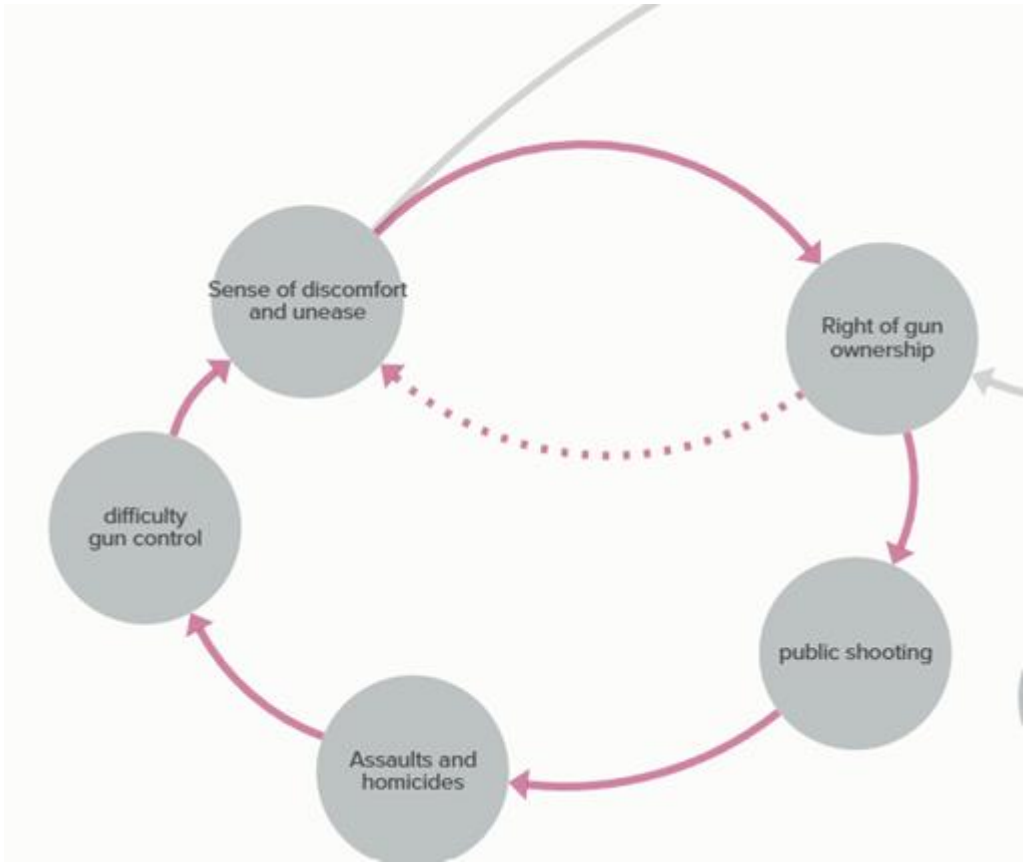

Figure 21 (Fixes The Fail Archetype #2)

The more sense of discomfort and unease, the solution is right of gun ownership with the intention to create less sense of discomfort and unease; however, right of gun ownership will lead to more public shootings, more assaults and homicides, and more difficulty in gun control; therefore it will lead us back to the sense of discomfort and unease.

4. 1.5 Trends Analysis

PEST	Horizon 1	Horizon 2	Horizon 3
Political	Governmental Support and Investment and funding	Global Regulatory Harmonization	Virtual Governance and Cybersecurity
	International Partnership	Bilateral and Multilateral Agreements	Global Policy Coordination
	The creation of standards and regulatory framework	Establish a safe and revolutionary virtual environment.	Ethical and Human Rights Considerations
Economical	Economic Diversification and Future Readiness	Digital Economy Transformation	Fourth Industrial Revolution Integration
	A resilient economy	Emerging Industry	Disruptive

	by reducing dependence on traditional sectors	Clusters and Specialization	Technologies and New Market Spaces
	Global Trade and Investment Opportunities	Alignment of economic growth with environmental conservation and resource efficiency	Economic Resilience and Adaptability
Societal	Technological Adoption and Digital Literacy	Digital Inclusion and Access	Human-Centric Design and User Experience
	Cultural Exchange and Globalization	Social Impact and Ethical Use of Technology	Virtual Community Building and Social Engagement
	Establishment of public trust and collaboration	Virtual security awareness and education	Privacy Protection and Data Governance
Technological	Advanced Data Analytics and Predictive Policing	Artificial Intelligence and Machine Learning	Quantum Computing and Cryptography
	Cybersecurity Technologies and Threat Intelligence	Internet of Things (IoT) Integration and Smart Solutions	Autonomous Systems and Robotics

	Virtual reality and augmented reality technologies	Blockchain for Secure Transactions and Identity	Autonomous Systems and Robotics

Table 1 (Trends Analysis)

Dubai Virtual Commercial City (VCC) has the potential to significantly alter the socioeconomic environment and the police landscape. It is clear from examining new political, economic, social, and technical trends over a range of time periods that the Dubai VCC will be crucial in determining how law enforcement and online trade develop in the future.

A commitment to establishing a favourable climate for virtual commerce while guaranteeing a safe and compliant platform is signalled by the formation and early rules of the VCC, which are highlighted by the changing political tendencies in Horizon 1. International cooperation and regulatory frameworks are becoming increasingly prominent as the VCC develops in Horizon 2, reflecting the need for unified policies to solve global issues and promote confidence in the virtual world. By Horizon 3, the VCC is a crucial part of international virtual trade, demanding strategic partnerships, diplomatic initiatives, and common governance frameworks to guarantee security and stability.

With economic diversification and job development at the forefront, Horizon 1 views the formation of the VCC as a promising centre for businesses. In Horizon 2, the VCC grows economically as it becomes the centre of the world's virtual commerce. However, this expansion also draws economic dangers including potential financial crimes and online threats. In order to protect against future disruptions, economic sustainability by Horizon 3 necessitates constant innovation in cybersecurity, digital financial regulation, and resilient economic policies.

In terms of society, the VCC's effect is first concentrated on giving users in Horizon 1 accessibility and convenience. The societal effects of the VCC become more complex as it advances to Horizon 2, sparking

debates about digital rights, data privacy, and virtual identity. By Horizon 3, the societal integration of the VCC calls for comprehensive frameworks for online behaviour standards, digital ethics, and means to redress socioeconomic inequalities brought on by virtual commerce.

Horizon 1 emphasises the integration of advanced technologies to improve user experiences while showcasing the technological underpinnings of the VCC. Advancements in AI-driven security measures, blockchain-based transactions, and quantum encryption to prevent cyberthreats are what define the VCC's technical progress in Horizon 2. By Horizon 3, continuing investments in R&D, supporting an innovation ecosystem, and becoming ready for disruptive technologies that could change the virtual environment are all necessary to sustain technical leadership.

In such a changing environment, the Dubai Police emerges as a significant player in determining the course of the Dubai VCC's future. The police force can guarantee a safe virtual environment, promote international collaboration, and provide solid frameworks that uphold the integrity of the VCC by adapting to changing trends and problems. In order to anticipate dangers, foster a culture of trust, and protect safety and security, cooperation between the Dubai Police and the VCC is crucial.

The success of this transformative journey will be determined by the cooperative methods, creative ideas, and adaptability displayed by both the Dubai Police and the VCC as the Dubai VCC continues to expand via many horizons. The understandings attained through deciphering the intricate interplay of political, economic, societal, and technological trends highlight the significance of staying ahead of the curve, continuously modifying tactics, and creating an ecosystem that will allow security and the virtual world to coexist peacefully in the future.

4. 1.6 Casual Layered Analysis

CLA of Dubai Virtual Commercial City	Indicators, Symptoms	Effects	Insight
Litany	Rapid growth of virtual commerce and trade	Increased economic opportunities	Dubai Virtual Commercial City acts as a centre for virtual trade and commerce on a worldwide scale, promoting economic development and luring investments.
	Emerging challenges in virtual crimes and cybersecurity	Risk to virtual ecosystem and stakeholders	Suffient measures must be in place to address and minimize virtual crimes, ensuring the safety and security of the virtual residents
Systems &	Governmental support and	Virtual police and	The support and

Institutions (organizations)	investment	law enforcement entities	investment of the Dubai government are essential in building a supportive environment for online business ventures and innovation.
	Virtual police and law enforcement agencies	Preserving the rule of law in the virtual city	To combat virtual crimes, maintain compliance, and offer security in the virtual commercial cities, specialised units and virtual police techniques are crucial.
Worldviews	Technological adoption and innovation mindset	Embracing emerging technologies and advancements	By utilising technology advancement to improve virtual experiences and accelerate digital transformation,

			Dubai Virtual Commercial City adopts a proactive stance.
	Global collaboration and cooperation	Cross-border partnerships in combating virtual crimes	Due to the fact that cybercrimes are transnational in scope, Dubai places a high priority on working with other countries to handle new problems jointly.
Myths & Metaphors	Dubai as a digital oasis	Symbolizes a transformative and prosperous virtual landscape	Dubai's status as a vibrant centre of virtual trade that provides possibilities and growth within the virtual ecosystem is represented by the metaphor of a digital oasis.
	Virtual police as digital guardians	Ensuring safety and security in the	The concept of virtual police as

		virtual city	digital guardians emphasises their function in securing the digital version of a commercial city and upholding law and order within.

Table 2 (Casual Layered Analysis)

4. 1.7 Revised Strategy of Dubai Police

In the revised strategy, Dubai Police will address these questions: How will the Dubai police need to adapt their organizational structure and operations to effectively police the Dubai Virtual Commercial City in the future? How will regulations and policies need to evolve to effectively police virtual commercial cities, and what challenges will this pose to the Dubai police? How will crimes be dealt with in the virtual world and what challenges will this pose to the Dubai police?

Vision	To create a virtual world free from virtual crimes, ensuring safety, trust, and prosperity for all virtual residents.
Mission	Through innovative technology, proactive enforcement, and cooperative alliances, our mission is to protect the integrity of the virtual world, providing a safe and prosperous environment for all virtual inhabitants. To build a virtual community free of online crimes and based on respect, trust, and transparency, we maintain the principles of flexibility, integrity, inclusivity, accountability, creativity, empathy, cooperation, and proactivity.

Values	Proactive, Adaptability, Customers Wellbeing & Tech Driven	
KPIs and Smart Goals		Impact
Reduce Virtual Crime Rate	Virtual Crime Rate (number of reported virtual crimes)	More specialised cybercrime units and employees skilled in digital investigations may arise from modifying organisational structure and operations to efficiently police the virtual city and the use of advanced technologies and better coordination may improve the response time to cybersecurity incidents.
	Successful Virtual Crime Investigations (percentage of closed cases)	
	Cybersecurity Incident Response Time (average time to respond to incidents)	
Cybersecurity Incident Response Time (average time to respond to incidents)	Virtual Resident Awareness Score (based on surveys)	Due to expanding legislation and regulations to properly govern virtual commercial cities, the Dubai police may prioritise efforts to raise
	Digital Literacy Index (measurement of digital knowledge)	
	Digital Literacy Index (measurement of digital knowledge)	

		public awareness of virtual safety and security. As a result, there may be an increase in digital literacy, better virtual resident awareness, and attendance at virtual safety courses.
Strengthen Global Collaboration	Number of Collaborative Partnerships with International Law Enforcement Agencies	The challenges of policing crimes in the virtual world may emphasise the importance of international collaboration in such efforts. As a result, the Dubai police may focus on establishing more friendly partnerships with international law enforcement agencies. This might lead to an increase in partnerships, greater collaboration index scores, and more
	Collaboration Index (measurement of information sharing)	
	Virtual Resident Satisfaction with International Cooperation (survey results)	

		global cooperation satisfaction among virtual inhabitants.

Table 3 (Revised Strategy of Dubai Police)

4. 1.8 Roadmap for the policing strategy of the Dubai VCC

Roadmap of Dubai VCC				
2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
Create a special and dedicated cybercrime unit inside the Dubai Police to efficiently combat virtual crimes.	Implement advanced virtual crime detection technologies for real-time monitoring and proactive prevention.	Construct a long-term plan for virtual policing that is in line with the changing environment of virtual crime and trade.	To address the rising needs of virtual policing, keep improving the organisational structure.	Create a virtual legal system with specialised judges and prosecutors to ensure efficiency and fairness.
To determine areas that require modification for virtual policing, do a thorough analysis of the current laws and procedures.	Revise the regulatory framework to incorporate rules specifically for virtual commercial cities	Conduct regular virtual community engagement initiatives to build trust and gather	Create a thorough legal framework for virtual commercial cities in cooperation	Assess the effect of the virtual police approach on crime rates and virtual resident satisfaction on a regular basis.

	that handle the difficulties of virtual crime.	feedback on virtual policing efforts.	with international partners and governmental organisations.	
nitiate collaborative partnerships with nternational law nforcement agencies or information sharing nd joint operations.	Organize virtual safety workshops and training sessions for virtual residents and businesses to enhance digital literacy.	Enhance virtual resident awareness through educational campaigns and online resources on virtual safety and security.	Launch a virtual police app to facilitate easy access to virtual safety information and reporting of virtual crimes.	Collaborate with virtual businesses to implement stronger security measures and enforce compliance with regulations.
Pilot the use of nnovative methods for irtual crime detection nd investigation, such s AI-driven analytics nd virtual reality.	By participating in joint operations and using digital information-sharing channels, strengthen working relationships with foreign law	To encourage residents of the virtual world to report events and suspicious activity, provide a platform for	Organise international conferences on virtual policing to exchange best practises, promote international collaboration,	Participate in international meetings and initiatives to assist with create global policies for fighting virtual crime, and keep coming up with new ideas and using cutting-edge technology to make

	enforcement organisations.	reporting virtual crimes. Additionally, evaluate the technologies that have been used and make the required improvements for best performance.	and investigate the use of blockchain technology to the administration of secure virtual crime data.	sure the virtual policing unit stays proactive and effective.

Table 4 (Roadmap for the policing strategy of the Dubai VCC)

The four phases of the security strategy of Dubai Police in Dubai VCC

The four phases of the security strategy of Dubai Police in Dubai VCC				
Phases	Initial Phase 2023-2024	The development Phase 2025-2026	The Integration Phase 2027-2028	The Excellency Phase Ongoing beyond 2028
Objectives	Establish the foundation for virtual policing by creating a dedicated cybercrime unit,	Expand the cybercrime unit, update regulatory framework,	Enhance virtual resident awareness, establish a virtual crime	Enhance virtual resident awareness, establish a virtual crime reporting platform, conduct regular community

	reviewing regulations, raising awareness, and initiating collaborative partnerships.	implement advanced virtual crime detection technologies, and strengthen collaborations with international law enforcement.	reporting platform, conduct regular community engagement, and collaborate with virtual businesses to improve security.	engagement, and collaborate with virtual businesses to improve security.
Measures of Success	Successful establishment of the cybercrime unit, identification of regulatory improvements, increased virtual resident awareness, and establishment of at least three collaborative partnerships with international law enforcement agencies.	Expanded and skilled cybercrime unit, integrated regulatory provisions, successful implementation of advanced virtual crime detection technologies, and active participation in joint virtual policing	Positive response and increased knowledge from virtual residents through awareness campaigns, consistent usage of the virtual crime reporting platform, positive feedback from community engagement,	Completion of a comprehensive long-term strategy, successful operation of the virtual court system, active participation and recognition in global virtual policing forums, and regular adoption of advanced technologies for virtual policing.

		exercises with international partners.	and successful implementation of security measures with virtual businesses.	

Table 5 (The four phases of Dubai Police development and measure of success)

Chapter 5 - Conclusion

5. 1.1 Conclusion

In conclusion, This paper discuss the reshift in the policing sector with the establishment of the Dubai Virtual Commercial City and encourages deeper understanding of of the opportunities, threats and implications that Dubai Police might encounter, this paper will also offer solutions and recommendations in order to minimize the virtual crimes and expand the safety and security in the virtual world. This study will show a clear correlation between lack of rules and regulations and new emerging virtual crimes.

Studies in this paper showcase that the Web-3 feature of decentralizing finance is considered one of the most challenging aspects in the future of the Dubai VCC security due to inability to trace or track transactions and encounters in the virtual world. This can create a larger complexity, especially with the creation of mafia groups while people are in demand of virtual security. Mafia groups thrive in lack of stability in the policing system and governance. This paper also argues that one of the main concerns and obstacles that needs to be

addressed in the revised strategy, especially due to the nature of the jurisdiction law in different countries which can lead to various uncertainties and risks and the studies show a clear correlation between virtual injustice, lack of trust in police and real life crimes.

Using various futuristic tools, we addressed these concerns such as fragmented jurisdictional landscape, lack of public trust in the digital police, organized crimes groups, Web-3, constrained budget and looked deeper in each concern to understand the challenges and find opportunities within these challenges that can be added in the revised strategy.

Dubai Police values are: positivity, objectivity, justice, transparency & teamwork and in order to achieve these values, this paper suggests the importance of including the virtual residents in the decision making process of the law enforcement, and to be clear and transparent about the security attempts and the governance of the platform. Countless numbers of recommendations based on real-life experiences was given by this paper such as a fair use handbook to showcase the governance, the terms and conditions of the users, a virtual court with real world legislators supported by a universal, comprehensive legislative framework that showcase the guideline and community standard and punishments, a framework that detects and authorize the trade and commerce products. The paper goes deeper in the discussion of the freedom of movement of the avatars such as the expression of the sexual acts and whether it can be resembled as sexual harassment, rape or child pornography.

5. 1.2 Recommendations

The paper suggests the necessity of establishing a system that detects the visual content e.g., child's body to minimize the spread of child pornography which is a clear problem in the other virtual worlds. Moreover, there are other recommendations such as filtering and monitoring offensive and inappropriate content systems. After benchmarking with the other governments, there are important practices that should be taken into consideration

such as a decentralized payment system, cryptocurrency exchange, and network providers should be registered and aligned with the regulations, and licensing requirements for virtual commerce.

5. 1.3 Future Work

As we peer into the horizon of future possibilities, the landscape of the Dubai Virtual Commercial City, a future research that can expand upon the insights gained from this thesis and address emerging complexities within the realm of the Dubai Virtual Commercial City and its impact on the policing sector such as the security of the virtual environment, the establishment of virtual crimes prevention system, creation of resilient specialised legal frameworks for virtual offences, as well as by addressing ethical issues and human rights consequences. In addition to researching real-time crisis management procedures in the virtual world.

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Appendix

Appendix I – Cover Page

How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

by

Shamma Ghanim Mohammad Al Marri

A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Science in Professional Studies: Master of Science in Professional Studies of Future Foresight and Planning

Rochester Institute of Technology

RIT Dubai

August 24, 2023

Master of Science in Professional Studies of Future Foresight and Planning

Department of Graduate Programs & Research

Appendix II – Signature Page

Graduate Thesis Approval

Master of Science in Professional Studies of Future Foresight and Planning

Student Name: Shamma Ghanim Al Marri

Paper Title: How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

Graduate Title: How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

Graduate Thesis Committee:

Name: Dr. Sanjay Modak **Date:**
Chair of committee

Name: Dr Philippe Bouvier **Date:**
Member of committee

Appendix III - Supplemental Signature Page

Master of Science in Professional Studies of Future Foresight and Planning

Student Name: Shamma Ghanim Al Marri

Paper Title: How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

Graduate Paper Approval

Graduate Title: How Will the Future of the Dubai Virtual Commercial City Reshape the Policing Sector?

Graduate Thesis Committee:

Name: Dr. Sanjay Modak **Date:**

Chair of committee

Sanjay Modak Digitally signed by Sanjay Modak Date: 2023.09.04 11:18:09 +04'00'

Name: Dr Philippe Bouvier **Date: 1st September 2023**

Member of committee

PhB
