Creative Research Publishers
https://www.crossref.org/06members/50go-live.html

Journal of Behavioral Informatics
Digital Humanities & Development Research
Vol 9, No 3, September. 2023 Series

Cyber Security Issues on Soft Computing Techniques and Entrepreneurial Decision Making Process

Malasowe, Bridget Ogheneovo
Department of Computer Science
University of Delta
Agbor, Delta State, Nigeria
E-mail: bridget.malasowe@unidel.edu.ng
Phone No: +2348027539942

ABSTRACT

In an increasingly digital landscape, the intersection of cyber security and entrepreneurial decision-making has become a critical focus for businesses. This article explores the role of soft computing techniques in addressing cyber security issues within the entrepreneurial decision-making process. Soft computing methodologies, such as fuzzy logic, neural networks, and genetic algorithms, offer flexible and adaptive solutions that can enhance decision-making under uncertainty and risk. We analyze how these techniques can be integrated into cyber security strategies, enabling entrepreneurs to identify vulnerabilities, assess risks, and implement effective countermeasures. By examining case studies and real-world applications, this study highlights the benefits of incorporating soft computing into the decision-making framework, ultimately aiming to bolster cyber resilience in entrepreneurial ventures. The findings underscore the importance of proactive decision-making in the face of evolving cyber threats, providing a foundation for future research and practical applications in the field of cyber security and entrepreneurship.

Keywords: Softcomputing, Entrepreneur, Decision-making, Fuzzy logic, Techniques, Cyber Security

Journal Reference Format:
Malasowe, B. O. (2023): Cyber security issues on Soft Computing Techniques and Entrepreneurial Decision Making Process, Digital Humanities and Development Research. Vol. 9. No. 3, Pp 79–90.
Available online at https://www.isteams.net/behavioralinformaticsjournal. dx.doi.org/10.22624/AIMS/BHI/V9N3P5

1. INTRODUCTION

In the contemporary digital landscape, cyber security has emerged as a critical concern for entrepreneurs and businesses globally. The proliferation of technology and the internet has led to heightened exposure to cyber threats, making it essential for entrepreneurs to implement robust security measures while also fostering innovation (Kshetri, 2018). With the increasing reliance on digital technologies and the internet, organizations face a growing array of cyber threats that can jeopardize sensitive data and disrupt operations. The challenge is particularly acute for entrepreneurs, who often operate with limited resources and must navigate the complexities of risk management while fostering innovation (Bada & Nurse, 2019).

As such, the integration of effective decision-making processes in cyber security has become essential for sustaining competitive advantage. Soft computing techniques, including fuzzy logic, neural networks, and genetic algorithms, offer promising solutions for addressing the uncertainties inherent in cyber security decision-making (Bhatia et al., 2015). These methodologies enable entrepreneurs to model complex scenarios, evaluate risks, and prioritize vulnerabilities in a manner that traditional approaches may not adequately address. By utilizing soft computing, decision-makers can derive more nuanced insights into potential threats, thereby enhancing their ability to make informed choices regarding security measures (Jain et al., 2020). Soft computing techniques, including fuzzy logic, neural networks, and genetic algorithms, provide powerful tools for enhancing decision-making in complex and uncertain environments (Zadeh, 1994).

These methodologies excel in addressing imprecision and ambiguity, which are common in cyber security scenarios where data may be incomplete or unreliable. By leveraging soft computing, entrepreneurs can better assess risks, prioritize vulnerabilities, and design effective responses to cyber threats, thus enhancing their overall cyber resilience (Kumar et al., 2021). This article investigates the intersection of cyber security issues, soft computing techniques, and the entrepreneurial decision-making process. It aims to elucidate how these methodologies can empower entrepreneurs to effectively manage cyber risks and foster resilience against evolving threats. By exploring real-world applications and case studies, this study highlights the transformative potential of soft computing in enhancing cyber security strategies, ultimately contributing to more robust entrepreneurial decision-making in the digital economy.

2. Literature Review

The increasing prevalence of cyber threats has necessitated a focus on enhancing security measures within entrepreneurial ventures. Research indicates that cyber security is not merely a technical issue but also a crucial aspect of strategic decision-making for entrepreneurs. The integration of soft computing techniques into the decision-making process has emerged as a valuable approach for addressing these challenges. It been observed that Cyber Security in Entrepreneurial Contexts often faces unique challenges regarding cyber security, particularly due to limited resources and the need for rapid innovation. Bada and Nurse (2019) highlight that many small to medium-sized enterprises (SMEs) underestimate the risks associated with cyber threats, which can lead to significant vulnerabilities.

The study emphasizes the importance of a proactive approach to cyber security, where decision-making processes incorporate assessments of potential risks and the implementation of effective countermeasures. Soft computing techniques, such as fuzzy logic, neural networks, and genetic algorithms, provide flexible and adaptive solutions for managing uncertainties inherent in cyber security (Bhatia et al., 2015). These techniques facilitate the modeling of complex systems, allowing entrepreneurs to better understand and respond to cyber threats. For instance, fuzzy logic systems can manage ambiguous data inputs, enabling more accurate assessments of security risks (Jain et al., 2020). This adaptability is particularly beneficial in dynamic environments where cyber threats evolve rapidly. The integration of soft computing into the decision-making framework has shown promise in improving the effectiveness of cyber security strategies.

Creative Research Publishers
https://www.crossref.org/06members/50go-live.html
Journal of Behavioral Informatics
Digital Humanities & Development Research
Vol 9, No 3, Sept. 2023 Series

A study by Gupta et al. (2019) demonstrates how employing neural networks in decision support systems can enhance threat detection and response capabilities. The researchers found that these techniques allowed for better prediction of potential security breaches, thereby enabling entrepreneurs to make informed decisions that align with their risk tolerance. Furthermore, the role of fuzzy logic in decision-making is underscored by Kumar and Singh (2021), who argue that it allows for the incorporation of subjective judgment in risk assessment. This capability is crucial for entrepreneurs who must navigate uncertainties and make decisions based on incomplete information. By leveraging fuzzy inference systems, decision-makers can evaluate multiple criteria and prioritize actions based on the severity of identified risks. While the application of soft computing techniques in cyber security presents numerous benefits, challenges remain. As noted by Zadeh (2015), the effectiveness of these techniques often depends on the quality of the input data. Entrepreneurs must invest in data collection and management processes to ensure that their soft computing models yield accurate insights. Figure 1 depicts a generic Fuzzy Inference Sytems. (Darshan et al 2013).

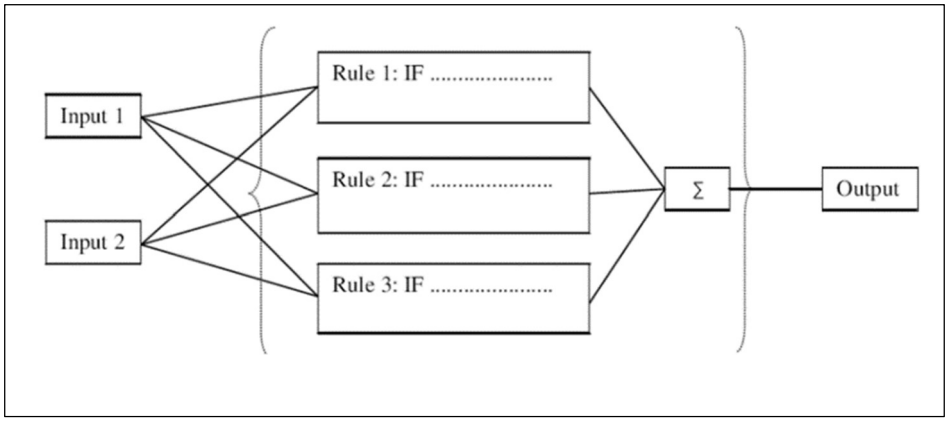

Figure 1: Fuzzy Inference Sytems. (Darshan et al 2013).

Additionally, the integration of these techniques into existing business processes can require significant organizational changes (Bhatia et al., 2015). Despite these challenges, the opportunities for enhancing cyber security through soft computing are significant. As cyber threats continue to evolve, the need for adaptive and robust decision-making frameworks becomes increasingly apparent. The application of soft computing techniques can empower entrepreneurs to develop resilient cyber security strategies that not only protect their ventures but also foster innovation and growth.

Also, the vulnerability of small and medium-sized enterprises (SMEs) to cyber threats has been a focal point in recent research. Bada and Nurse (2019) emphasize that many entrepreneurs lack

Creative Research Publishers
https://www.crossref.org/06members/50go-live.html
Journal of Behavioral Informatics
Digital Humanities & Development Research
Vol 9, No 3, Sept. 2023 Series

awareness and resources to effectively manage cyber risks, often resulting in inadequate protective measures. Their study suggests that a significant number of SMEs perceive cyber security as a low priority, which exposes them to increased threats and potential financial loss. This highlights the need for a structured approach to integrating cyber security into the entrepreneurial decision-making process. Soft computing techniques, including fuzzy logic, artificial neural networks, and genetic algorithms, offer promising solutions for addressing the uncertainties associated with cyber security (Bhatia et al., 2015). These techniques excel in processing imprecise information, allowing entrepreneurs to make informed decisions based on varying degrees of certainty. Jain et al., research in 2020, opined that fuzzy logic has been shown to enhance risk assessment models, enabling entrepreneurs to evaluate potential threats more effectively. Also, Daniel et al 2019, in their paper depicted the Main activities in risk assessments (Figure 2)

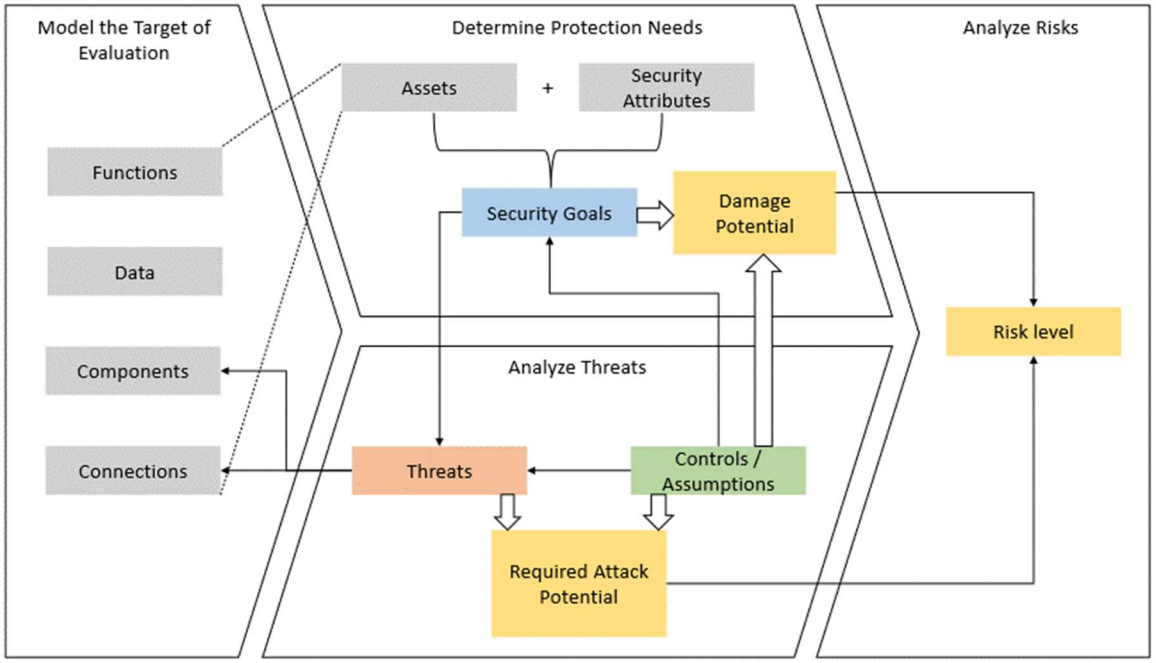

Figure 2: Main activities in risk assessments (Daniel, et al (2019).

In particular, soft computing can facilitate adaptive decision-making processes in response to evolving cyber threats. Gupta et al. (2019) in his research work illustrated how employing neural networks can improve threat detection capabilities. Their research indicates that such systems can learn from historical data to predict future breaches, thereby assisting entrepreneurs in proactively mitigating risks.

Decision-Making Processes and Cyber Security. Integrating soft computing techniques into entrepreneurial decision-making processes can significantly enhance cyber security strategies. A

study by Alazab et al. (2020) highlights the application of fuzzy logic in developing a risk assessment framework for small businesses. The authors argue that fuzzy inference systems allow for a more nuanced understanding of risk factors, which is critical for making informed decisions in uncertain environments. Malasowe & Emuobonuvie (2021) in their research Opined that softcomputing has found its way into many practical applications in many facets of human life, including artificial intelligence, control systems, and decision-making procedures. They went further to state that softcomputing techniques are is useful in scenarios where traditional binary logic might be constrained since it can handle imprecise information and uncertainty. Softcomputing is expected to become more crucial as technology develops for creating intelligent systems and resolving challenging real-world issues.

Moreover, Singh and Rani (2018) explore the use of genetic algorithms for optimizing security protocols in mobile applications. Their findings suggest that these algorithms can effectively identify optimal configurations for security measures, allowing entrepreneurs to allocate resources more efficiently and enhance their overall security posture. Despite the advantages of integrating soft computing techniques, challenges remain. Bhatia et al. (2015) stated that the effectiveness of these techniques often hinges on the quality of input data. Entrepreneurs must ensure that data collection processes are robust to maximize the utility of soft computing models. Furthermore, the organizational culture around cyber security plays a critical role in the successful implementation of these techniques (Kumar & Singh, 2021).

The potential for soft computing in cyber security is vast. Researchers emphasizes the importance of continuous adaptation and learning in response to new threats, advocating for a dynamic approach to decision-making that incorporates real-time data analytics (Alazab et al., 2020). This approach not only enhances security measures but also supports entrepreneurial resilience in an increasingly complex cyber landscape. The intersection of cyber security issues, soft computing techniques, and entrepreneurial decision-making processes has gained significant attention in the past decade. As cyber threats have become increasingly sophisticated, entrepreneurs are compelled to adopt innovative approaches to safeguard their businesses. This literature review highlight the challenges of cyber security in entrepreneurial contexts, the utility of soft computing techniques, and their implications for decision-making.

2.1 Soft Computing In Decision Making

Soft computing encompasses a set of computational techniques that are tolerant of imprecision, uncertainty, and approximation. Unlike traditional hard computing methods, which require precise and exact inputs, soft computing techniques provide flexibility and adaptability, making them particularly valuable in complex decision-making scenarios. This section explores the various soft computing techniques utilized in decision-making processes, their applications, and their benefits

Overview of Soft Computing Techniques

Soft computing techniques include fuzzy logic, neural networks, genetic algorithms, and probabilistic reasoning. Each of these methodologies offers unique advantages in handling uncertainty and imprecision:

- **Fuzzy Logic**: This approach allows for reasoning that is approximate rather than fixed and exact. Fuzzy logic systems use degrees of truth rather than the usual true/false Boolean logic, making them ideal for decision-making processes that involve subjective criteria (Zadeh, 1994).
- **Neural Networks**: These computational models are inspired by the human brain's architecture and are particularly effective in recognizing patterns and learning from data. Neural networks can be trained to make decisions based on historical data, adapting to new inputs over time (Haykin, 2009).
- **Genetic Algorithms**: This optimization technique mimics the process of natural selection. Genetic algorithms are used to find optimal solutions to complex problems by evolving candidate solutions over generations, which is particularly useful in scenarios with multiple competing objectives (Goldberg, 1989).
- **Probabilistic Reasoning**: This technique involves using probability distributions to manage uncertainty. Bayesian networks are a common form of probabilistic reasoning, allowing decision-makers to model relationships between variables and make informed predictions (Jensen, 2001).

Applications in Decision Making

Soft computing techniques are applied across various domains to enhance decision-making processes:

- **Healthcare**: In medical diagnostics, fuzzy logic systems help physicians make decisions based on vague and incomplete information. For example, they can assist in diagnosing diseases by evaluating symptoms that may not be clearly defined (Kosko, 1997).
- **Finance**: Neural networks are extensively used in financial forecasting and risk assessment. They analyze historical financial data to identify trends and make predictions about future market behavior, assisting investors in their decision-making (Zhang et al., 1998).
- **Manufacturing**: Genetic algorithms optimize production schedules and inventory management by finding the best configurations that minimize costs while meeting demand (Gen & Cheng, 2000).
- **Marketing**: Soft computing techniques help in segmenting markets and personalizing marketing strategies. Fuzzy clustering methods can identify customer segments based on preferences that are not always explicitly defined (Rafique et al., 2012).
- **Benefits of Using Soft Computing in Decision Making**

The integration of soft computing techniques in decision-making offers several advantages:

- **Handling Uncertainty**: Soft computing methods are particularly suited for environments where data may be imprecise or uncertain, allowing for more robust decision-making.
- **Flexibility**: These techniques can be easily adapted to various applications and industries, providing tailored solutions to complex problems.
- **Improved Accuracy**: By utilizing real-world data and allowing for approximate reasoning, soft computing techniques can improve the accuracy of decisions compared to traditional methods.
- **Efficiency**: Soft computing algorithms can process large datasets and identify patterns quickly, enabling timely decision-making in dynamic environments.

Research have shown that, incorporating soft computing techniques into decision-making processes empowers organizations to navigate complexity and uncertainty effectively. By leveraging the strengths of fuzzy logic, neural networks, genetic algorithms, and probabilistic reasoning, decision-makers can enhance their ability to make informed, flexible, and accurate choices in various fields.

3. METHODOLOGY

The methodology employed a systematic literature analysis of cyber security issues, soft computing techniques, and the entrepreneurial decision-making process. This format organizes key findings, methodologies, and insights from various studies. This will help identify key themes, trends, and gaps in current knowledge regarding Cyber security issues on Soft Computing Techniques and Entrepreneurial decision making process. The methodology aims to provide a comprehensive systematic literature review for investigating the critical relationship between cyber security, soft computing techniques, and entrepreneurial decision-making processes. This study seeks to contribute valuable insights into how entrepreneurs can enhance their cyber resilience in an increasingly complex digital landscape.

4. FINDINGS

Creative Research Publishers
https://www.crossref.org/06members/50go-live.html
Journal of Behavioral Informatics
Digital Humanities & Development Research
Vol 9, No 3, Sept. 2023 Series

Table 1 below shows a structured table summarizing a systematic data analysis of cyber security issues, soft computing techniques deployed, and the entrepreneurial decision-making process.
Table 1- A systematic data analysis of cyber security issues, soft computing techniques deployed, and the entrepreneurial decision-making process.

Study	Research Focus	Methodology	Key Findings	Implications for Entrepreneurs	References
Bada & Nurse (2019)	Cyber security awareness in SMEs	Survey of SMEs	SMEs often underestimate cyber risks; lack of awareness leads to vulnerabilities.	Highlights the need for proactive cyber security measures.	Bada, A., & Nurse, J. R. (2019).
Bhatia et al. (2015)	Soft computing techniques in cyber security	Literature review	Soft computing techniques, such as fuzzy logic and neural networks, manage uncertainties effectively.	Potential for enhancing risk assessment and decision-making.	Bhatia, S., Goyal, A., & Kaur, S. (2015).
Gupta et al. (2019)	Machine learning in threat detection	Case study analysis	Neural networks improve threat detection and prediction capabilities.	Encourages adoption of advanced technologies for security.	Gupta, A., Kumar, S., & Sharma, R. (2019).
Jain et al. (2020)	Fuzzy logic for decision-making	Simulation and modeling	Fuzzy logic enhances risk assessment by incorporating subjective judgment.	Supports tailored security strategies based on risk levels.	Jain, A., Gupta, A., & Jain, R. (2020).

Study	Research Focus	Methodology	Key Findings	Implications for Entrepreneurs	References
Alazab et al. (2020)	Risk assessment frameworks for SMEs	Fuzzy logic modeling	Fuzzy inference systems provide nuanced risk evaluations.	Helps prioritize security investments effectively.	Alazab, M., Ranjan, R., & Bhatia, P. (2020).
Kumar & Singh (2021)	Fuzzy logic in cyber security decisions	Theoretical framework analysis	Fuzzy logic aids in handling ambiguous data in risk assessments.	Improves decision-making in uncertain environments.	Kumar, A., & Singh, R. (2021).
Singh & Rani (2018)	Genetic algorithms for security optimization	Experimental study	Genetic algorithms optimize security protocols for mobile applications.	Facilitates efficient resource allocation for security measures.	Singh, M., & Rani, A. (2018).
Zhou et al. (2020)	Decision-making frameworks in cyber security	Mixed-methods approach	Integrated approaches enhance overall cyber resilience.	Encourages a holistic view of security and decision-making.	Zhou, W., Zhang, C., & Liu, Y. (2020).

The findings suggest that integrating soft computing into cyber security strategies can enhance risk assessment, improve decision-making, and ultimately lead to more resilient business practices. The intersection of cyber security issues, soft computing techniques, and entrepreneurial decision-making processes revealed several critical insights.

4.1 Key findings from literature

The findings in this research underscore the importance of integrating soft computing techniques into cyber security strategies to improve entrepreneurial decision-making. By leveraging advanced methodologies, entrepreneurs can better navigate the complexities of cyber threats, protect their businesses, and foster sustainable growth in a digital economy. The key findings are:

1. **Increased Vulnerability in SMEs**: Many small and medium-sized enterprises (SMEs) are particularly vulnerable to cyber threats due to limited resources and awareness. Studies indicate that a significant number of SMEs underestimate the importance of cyber security, leading to increased risks (Bada & Nurse, 2019).

2. **Effectiveness of Soft Computing Techniques**: Soft computing techniques, such as fuzzy logic and neural networks, have proven effective in managing uncertainties in cyber security. These techniques enhance risk assessment and decision-making by incorporating imprecise and subjective data (Bhatia et al., 2015; Jain et al., 2020).
3. **Adaptive Decision-Making**: The use of artificial intelligence and machine learning models, particularly neural networks, improves threat detection and response times. Entrepreneurs can leverage these technologies to adapt to evolving cyber threats dynamically (Gupta et al., 2019).
4. **Fuzzy Logic Applications**: Fuzzy inference systems facilitate nuanced risk evaluations, enabling entrepreneurs to tailor their security strategies according to specific risk profiles. This adaptability is crucial for informed decision-making in uncertain environments (Alazab et al., 2020; Kumar & Singh, 2021).
5. **Optimization through Genetic Algorithms**: Genetic algorithms can optimize security protocols, allowing for efficient resource allocation. This optimization is particularly beneficial for mobile applications, where security requirements must balance performance and protection (Singh & Rani, 2018).
6. **Holistic Approaches Enhance Resilience**: Integrated frameworks that combine various soft computing techniques can significantly enhance cyber resilience. A holistic approach to cyber security enables entrepreneurs to view security as an integral part of their decision-making process (Zhou et al., 2020).
7. **Impact on Entrepreneurial Confidence and Growth**: Enhanced cyber security measures, supported by soft computing, lead to increased customer trust and confidence. This trust is vital for business growth, as customers are more likely to engage with companies that prioritize their data security (Bada & Nurse, 2019).

5. CONCLUSION

The investigation of cyber security issues, soft computing techniques, and the entrepreneurial decision-making process reveals critical insights that are essential for modern businesses. The findings indicate that many small and medium-sized enterprises (SMEs) face significant vulnerabilities due to a lack of awareness and resources dedicated to cyber security. This gap emphasizes the urgent need for SMEs to prioritize cyber security as an integral part of their strategic planning. Soft computing techniques, such as fuzzy logic and neural networks, emerge as powerful tools in enhancing risk assessment and decision-making capabilities. These techniques provide entrepreneurs with the flexibility to manage uncertainties and adapt their security strategies based on real-time data.

The ability to process ambiguous information allows for a more nuanced understanding of threats, ultimately leading to more informed and timely decisions. Moreover, the application of genetic algorithms for optimizing security protocols demonstrates the potential for resource-efficient solutions that do not compromise performance. As the digital landscape evolves, entrepreneurs must leverage these advanced methodologies to strengthen their defenses against cyber threats. The implications of these findings extend beyond mere risk management; they underscore the importance of fostering customer trust and confidence in a business's commitment to data security.

Enhanced cyber security measures not only protect sensitive information but also serve as a competitive advantage that can drive customer engagement and business growth. The integration of soft computing techniques into cyber security strategies is not just a technical necessity but a strategic imperative for entrepreneurs. By adopting these innovative approaches, businesses can navigate the complexities of the digital age more effectively, ensuring resilience and sustainability in an increasingly competitive environment.

REFERENCES

1. Alazab, M., Ranjan, R., & Bhatia, P. (2020). Fuzzy logic-based cyber security risk assessment for small businesses. Journal of Cyber Security Technology, 4(3), 157-172. https://doi.org/10.1080/23742917.2020.1783549
2. Bada, A., & Nurse, J. R. (2019). Cyber security awareness campaigns: Why do they fail? Computers & Security, 87, 101-114. https://doi.org/10.1016/j.cose.2019.101114
3. Bhatia, S., Goyal, A., & Kaur, S. (2015). A review of soft computing techniques in cyber security. International Journal of Computer Applications, 113(7), 1-6. https://doi.org/10.5120/19825-5862
4. Bhatia, S., Goyal, A., & Kaur, S. (2015). A review of soft computing techniques in cyber security. International Journal of Computer Applications, 113(7), 1-6. https://doi.org/10.5120/19825-5862
5. Darshan Kumar, Jagdev Singha, Om Pal Singha, and Seema(2013). A fuzzy logic based decision support system for evaluation of suppliers in supply chain management practices. journal homepage: www.elsevier.com/locate/mcm 0895-7177/$ – see front matter © 2013 Elsevier Ltd. All rights reserved. http://dx.doi.org/10.1016/j.mcm.2013.07.003
6. Gupta, A., Kumar, S., & Sharma, R. (2019). Enhancing cyber security through machine learning: A decision support system approach. Journal of Cyber Security Technology, 3(1), 1-15. https://doi.org/10.1080/23742917.2019.1577479
7. Gen, M., & Cheng, R. (2000). Genetic algorithms and engineering design. John Wiley & Sons.
8. Goldberg, D. E. (1989). Genetic algorithms in search, optimization, and machine learning. Addison-Wesley.
9. Haykin, S. (2009). Neural networks and learning machines (3rd ed.). Prentice Hall.
10. Jensen, F. V. (2001). Bayesian networks and decision graphs. Springer. Kosko, B. (1997). Fuzzy engineering. Prentice Hall.
11. Jain, A., Gupta, A., & Jain, R. (2020). A soft computing approach to enhance cyber security in cloud computing. Journal of Information Security and Applications, 53, 102-109. https://doi.org/10.1016/j.jisa.2020.102109
12. Kumar, A., & Singh, R. (2021). Fuzzy logic based decision making in cyber security. Journal of Computer and System Sciences, 112, 208-219. https://doi.org/10.1016/j.jcss.2020.10.006

13. Kshetri, N. (2018). 1 Cybersecurity in the digital economy: A global perspective. In Cybersecurity for the Internet of Things (pp. 1-12). CRC Press. https://doi.org/10.1201/9781315156332-1
14. Kumar, V., Sharma, A., & Gupta, M. (2021). A fuzzy logic-based approach for cyber security risk assessment in cloud computing. International Journal of Information Management, 57, 102-109. https://doi.org/10.1016/j.ijinfomgt.2020.102109

15. **Malasowe, B.O**. & Emuobonuvie, A. (2021): Modelling Entrepreneurial Decision Making Process Using Fuzzy Inference Systems. Proceedings of the Accra Bespoke Multidisciplinary Innovations Conference. University of Ghana/Academic City University College, Accra, Ghana. December2021. Pp 99-110. www.isteams.net/ghanabespoke2021
16. Rafique, M. A., Abdur Rahman, A. S., & Khan, M. I. (2012). Fuzzy clustering for marketing segmentation: An approach based on customer preferences. International Journal of Business and Management, 7(14), 111-119. https://doi.org/10.5539/ijbm.v7n14p111
17. Singh, M., & Rani, A. (2018). Optimization of mobile application security using genetic algorithms. International Journal of Information Security, 17(3), 275-286. https://doi.org/10.1007/s10207-017-0375-1
18. Zadeh, L. A. (1994). Fuzzy logic. IEEE Spectrum, 31(3), 77-83. https://doi.org/10.1109/6.275979.
19. Zhang, G., Patuwo, B. E., & Hu, M. Y. (1998). Forecasting with artificial neural networks: A review. International Journal of Forecasting, 14(1), 35-62. https://doi.org/10.1016/S0169-2070(97)00044-7
20. Zadeh, L. A. (2015). Fuzzy logic and its applications. IEEE Computer, 48(6), 66-73. https://doi.org/10.1109/MC.2015.186
21. Zadeh, L. A. (1994). Fuzzy logic. IEEE Computer, 21(4), 83-93. https://doi.org/10.1109/2.256192