International Journal of Civil Engineering and Technology (IJCIET)

Volume 10, Issue 1, January 2019, pp.356–363, Article ID: IJCIET_10_01_033 Available online at https://iaeme.com/Home/issue/IJCIET?Volume=10&Issue=1 ISSN Print: 0976-6308 and ISSN Online: 0976-6316

©IAEME Publication



Scopus Indexed

ANALYSIS OF DATO' BAHAMAN'S BATTLE STRATEGIES IN THE PAHANG UPRISING 1891-1895

Amnah S. Ismail

Faculty of Defence Studies and Management, National Defence University of Malaysia, Kuala Lumpur, Malaysia

Wan Kamal Mujani

Faculty of Islamic Studies, National University of Malaysia, Malaysia

B. Jalal & N. Zainal Shah

Faculty of Defence Studies and Management, National Defence University of Malaysia, Kuala Lumpur, Malaysia

ABSTRACT

Dato' Bahaman led the Pahang resistance forces against British encroachment in a series of battles known as the Pahang Uprising. In these battles, Dato' Bahaman employed various strategies against the opposing British forces. This article will analyse the battle strategies used by Dato' Bahaman against the British by adopting literature review and content analysis as the methodology. Through this study, it was found that several strategies such as disguise, retreat, attack, fort building and many more were used by Dato' Bahaman and his forces. Dato' Bahaman executed planned battle strategies and created a great esprit de corps amongst his men. This shows that the Malays in the 19thcentury employed well thought out battle strategies combined with great fighting spirit and courage in confronting their enemies.

Key words: Dato' Bahaman, Pahang History and Battle Strategies.

Cite this Article: Amnah S. Ismail, Wan Kamal Mujani, B. Jalal and N. Zainal Shah, Analysis of Dato' Bahaman's Battle Strategies in The Pahang Uprising 1891-1895, *International Journal of Civil Engineering and Technology (IJCIET)*, 10 (1), 2019, pp. 356–363.

https://iaeme.com/Home/issue/IJCIET?Volume=10&Issue=1

1. INTRODUCTION

The Malays are known for their courage in battles especially in defending their land against intrusion by outside forces. This is evident in a series of armed resistance against colonial forces in the Malay Peninsula. Figures such as TokJanggut, Dol Said, Mat Kilau, Tok Gajah and Dato' Bahaman rose to fight against the colonial forces which try to invade their land. Several opinions pointed out the reason for the uprising was due to discontentment on issues such as tax collection, power struggle and several other reasons. Whatever the reason behind the uprising, the Malays proved to be a formidable force who were strong, united and responsible in defending their rights and motherland [1].

Dato' Bahaman was a courageous leader who led the locals against the British colonials in Pahang. The resistance against the British stemmed from the dissatisfaction amongst the locals on the British interference in their affairs and the introduction of new systems in the traditional Pahang administration at that time. Dato' Bahaman was very vocal in criticizing the British interference. After numerous attempts to reach an agreement with the British through negotiation failed, the people of Pahang rose against the British in what is known as the Pahang Uprising. This paper discusses the strategies employed by Dato' Bahaman and his forces which inflicted a huge loss on the British colonials as the British were caught off guard and underestimated the strength and cohesiveness of Dato' Bahaman and his men [2].

1.1. Background of Dato' Bahaman and British Presence in Pahang

NoriahSulungwrote about the impressive background and character of Dato' Bahaman which gained much respect by friends and foes alike. His real name was Abdul Rahman bin Tuanku Imam Nuh. He was the son of Tuanku Imam Nuh, who originated from Bangkinang Kampar Sumatera. His mother was Rokiah Abdul Rahman, the daughter of TokSetia Perkasa Semantan of Bugis lineage from South Sulawesi. Dato' Bahaman was very close to Sultan Ahmad since his childhood days. It started when his parents, TokSaadiah and Tok Noh moved to Pekan to serve the king. Bahaman was given to Bendahara Ali as a servant. Bendahara Ali took a liking towards Bahaman and took Bahaman as his adopted son [3].

Bahaman possessed great knowledge and was well versed in language, customs and traditions, mantras as well as the aborigines' healing practices. Due to his talent and knowledge, he was appointed as TokPeran (court jester), hunting master and the head of servants. When he reached adult age, Bahaman married CikMukut and they were blessed with four children, one of which was Tok Muda Mat Lela who was involved in the battle against British colonization.

Bahaman's excellent character was recognized not only by the locals but also by westerners who knew him. One of the westerners was Brokenshire who said that Bahaman was not only influential but also friendly. Clifford, meanwhile regard Bahaman as the best jungle scout in the Malay Peninsula [4].

The British presence in Pahang not only brought a new dimension to the state administration but also affected the daily life of the common people in Pahang. The appointment of the first British Resident in 1888 and the introduction of new laws and system, in the researchers' opinion brought about calamities which were not expected by the British. The people uprising against the British colonization resulted in public disturbances from 1891 to 1895. Bahaman and his men were labelled by the British as terrorists and rebels who deliberately create disturbances. However, from Bahaman's point of view, their actions were regarded as an open protest against the British colonials who tried to meddle in their daily affairs [5].

In mid-1889, both the British administration and the local traditional administration which refused to bow to British directives existed side by side. The Collector and the Magistrate were given the responsibility to collect taxes which were previously under the jurisdiction of the traditional chieftains. The chieftains were discontented with new laws introduced by the British and their anger towards the British was further fuelled by the stipends given by the British which were lower than what they use to get [6].

When the situation got unbearable, the traditional chieftains and the common people urged Dato' Bahaman to act. Since Dato' Bahaman was also affected by the new British administrative rulings, he had to negotiate with British officials, in particular the Governor. Dato' Bahaman accompanied by his clerk, Hasan took a sampan through Lake Bera to Johor where the negotiation was to be held.

The British government proposed Dato' Bahaman's monthly allowance to be increased from \$72 to \$500 but the proposal was rejected by Dato' Bahaman as other demands from the chieftains were not entertained by the British. Even though the negotiation failed, Dato' Bahaman advised the other chieftains to stay calm for the sake of the common people. Since the demands of Bahaman and the other chieftains were not met by the British, Bahaman and his men carried on with their tax collection activities as their means of income. The British repeatedly forbade Bahaman from collecting tax but was ignored as Bahaman was adamant not to let foreign forces dictate their administrative affairs. As a consequence, J.P. Rodger requested Tengku Mahmud to strip Dato' Bahaman of his post since Sultan Ahmad declined due to his liking towards Bahaman [7].

Dato' Bahaman's action in continuing to collect tax on sampans plying along Semantan River was a sign of protest against the British. The people did not object nor did they report the illegal tax collection to the British. The British were furious that Bahaman deliberately defy their directives [8].

Syers wrote a report based on his observation of the situation in Hulu Pahang where Orang Kaya To' Raja (Maharaja PerbaJelai) and Orang Kaya Semantan, who were dubbed as the despicable ruled. He believed that guns and ammunitions were kept by the locals but he wasn't sure of their quantities. He also believed that the people were planning to revolt against the British. Based on his queries to people in the upriver and the anger of the chieftains and the common people on the new system introduced by the British, Syers foresaw a revolt brewing. Due to several issues and the prevailing sentiments, two series of uprising broke out from 1891 to 1895 [9].

2. RESEARCH METHOD

This study employs the qualitative approach with emphasis on content analysis. This method was chosen since this study does not involve any statistical analysis or any other quantitative measurements. Content analysis was chosen as the research design in analysing the strategies employed by Dato' Bahaman in the Pahang Uprising. In conducting this study, the researchers need to browse through books, magazines, journals, articles, manuscripts, notes, documents, working papers and other written materials in order to extract information on the subject of study. The information obtained in this study enabled the researchers to gain better understanding of the research topic [10][11][12].

3. METHODANALYSIS ON DATO' BAHAMAN'S BATTLE STRATEGIES

Dato' Bahaman and his men had very good battle strategies. Having the advantage of local knowledge, they used their knowledge of Pahang's terrain to the maximum in fighting the invading British forces. They used every aspect of nature to plan strategies to overcome the enemy's advance into Pahang.

3.1. Sneaking

Amongst the strategy used by Dato' Bahaman was to sneak between trees in the forest. He used this strategy especially when he was pursued by Sikh constables who were tasked to apprehend him in Pasir Dir. He also used roots of spikemoss plant wound over his head and

body as the aborigines would. This startled the Sikh constables who fled and jumped into the river [13].

Dato' Bahaman was also known to have the capability of being invisible from the palace guards and his enemy's view. He was capable of sneaking between trees so much so that it was very difficult to trace him. In one incident, Dato' Bahaman was able to meet Sultan Ahmad when he arrived in Temerloh despite the presence of Rodger. Selampit who initially wanted to blowpipe Rodger who was with the Sultan in a boat was advised by Bahaman not to carry out the assassination so as to avoid hitting the Sultan. Although the Sultan was surrounded by his guards, Bahaman managed to meet the Sultan to ask for assistance. This incident proved Bahaman's ability to sneak in without arousing his enemy's curiosity [14].

3.2. Restraining British Advance Using Ring-rope

Another strategy used by Dato' Bahaman against the British was by laying ring-rope on the river bed in LubukSanggarat. The ring-rope was strung across the river and tied to two Merbau trees opposite each other on the river banks. Making use of what nature presents, Dato' Bahaman and his men will yank the rope as boats carrying British troops passed by. The boats will overturn and the British troops will be drowned by the strong current. At other times, they will let the British troops passed by and only on their return trip, Dato' Bahaman and his men will employ this strategy. British soldiers who fell into the river will be blow-piped by Dato' Bahaman's men [15].

3.3. Disguise

Disguise was another strategy employed by Dato' Bahaman. By disguising himself, Dato' Bahaman was able to infiltrate into the enemy's fort to obtain useful information. An example of the information obtained by Dato' Bahaman using this tactic was the deployment of Rawanese Malays and Sikh soldiers to Pahang. With the information obtained, Dato' Bahaman and his men were able to ambush the soldiers by rolling boulders on their path and blow-piping them. Dato' Bahaman also succeeded in cutting off communication from Tras to Selangor by cutting the telegraph cables [16].

3.4. Double Agent

Placing double agents was also another tactic used by Dato' Bahaman. In one incident, Dato' Bahaman managed to recruit TokPulut and Haji Osman, both of them were pioneer tin miners in Selinsing near Kuala Medang Hulu Jelai. TokPulut and Haji Osman pretended helping the British in order to safe their families and village. In one incident, hungry Sikh soldiers asked for some food from TokPulut. He served them uncooked wheat porridge which made the soldiers ill [17].

3.5. Retreat

Dato' Bahaman also used retreat as one of his strategies. Groups of men, women and children were formed where the women and children groups were directed to retreat first under the supervision of DolahSeman and Mat Dahan while the men fought with the enemy. Having the advantage of local terrain and the surroundings, they were able to retreat deep into the jungle making it difficult for the enemy to track them [18].

3.6. Engaging in Battle

The second phase of Bahaman's struggle against the British saw strategies which were steep with religious sentiment. It was the result of the intervention and advice of Tok Ku Paloh in Terengganu. The rallying call to help Dato' Bahaman received a great response from the people of Terengganu. Sultan Zainal Abidin and other Terengganu chieftains also supported the call. Tok Ku Paloh through his sermons liken the struggle as a religious war. Dato' Bahaman was portrayed as a great warrior. Religious sentiments were injected in the struggle against the infidels. The people of Terengganu made Paloh as their preparation centre. When they were fully prepared, Tok Ku Paloh sent them into battle equipped with arms which were inscribed with Quranic verses.

During the battle, Takbir (Allah is Great) were cried out by Dato' Bahaman's men. They fought whole heartedly in the attack of Kuala Tembeling police station where they went on a rampage and stabbed the Sikh constables with sword and Keris. Five Sikh police constables died while one was injured in the attack [19].

3.7. Building Fortress

Dato' Bahaman also built fortresses to defend and control his position. The fortresses were used to monitor the enemy's movements and also to plan attacks on enemy positions. Amongst the fortress built by Dato' Bahaman was in JeramAmpai, which was located 6 kilometres from Kuala Tembeling. The fortress was seized from 11 Sikh soldiers who were manning the fortress. Meanwhile MamatKelubi with the help of fifty men were left behind to man the Kuala Tembeling fortress [20].

4. CONCLUSION

Based on the discussions above, it can be seen that Dato' Bahaman employed several strategies against the British forces. Amongst them were using disguise, sneaking, retreat, double agent and many more. From these strategies, it was evident that Dato' Bahaman and his men were well prepared to face the invading British forces. The researchers opined that based on the strategies employed by Dato' Bahaman, it was clear that he was an intelligent strategist, being able to utilised his knowledge and resources to face his enemy. In the second phase of the uprising, religious sentiments were used to unite and mobilise the fighters, for instance the cries of Takbir boosted their fighting spirit [21-35].

Based on the discussions, the researchers opined that the Pahang Uprising was a manifestation of the people's resentment over the presence of colonials in Pahang. Hugh Clifford was the first British agent appointed in 1887, but the British kept on pressuring the Sultan and Malay chieftains to accept a British Resident. Finally, in 1888, J. P. Rodger was appointed as the first British Resident in Pahang. Meanwhile the analysis on the battle strategies employed by Dato' Bahaman Meanwhile the analysis on the battle strategies employed by Dato' Bahaman proves that he was a great and intelligent fighter. He utilised his knowledge on the surroundings and terrain to plan effective strategies against the enemy such as disguise, sneaking, and retreat. The strategies employed caught the British by surprise which proved Dato' Bahaman as a well versed and intelligent Malay warrior and battle strategiest [36-50].

ACKNOWLEDGEMENTS

This research was carried out under Project GP-K006407, Project GIP-2018-002 and Project FRGS/1/2016/SSI06/UKM/02/1. The authors would like to thank the Research and Instrumentation Management Centre (CRIM), UKM and The Ministry of Education, Malaysia for funding this research.

REFERENCES

- [1] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. *Middle East Journal of Scientific Research*, 20(12), 2014, pp. 2142-2146.
- [2] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.
- [3] Sulung, Noriah. Dato' Bahaman: Orang Kaya Setia Perkasa pahlawanSemantan. In NorazitSelat (ed.), Pahang DahuludanSekarang, PersatuanMuzium Malaysia, Kuala Lumpur, 1996, pp.34-56.
- [4] Ismail, A. S., Jalal, B., MdSaman, M. and Mujani, W. K. 19th century Pahang Islamic scholars in 'A history of Pahang'. In Proceedings of the 2017 International Conference on Education, Economics and Management Research (ICEEMR 2017), Atlantis Press, 2017, pp.192-194.
- [5] Muttalib, Jang Asjah. Pemberontakan Pahang 1891-1895, Penerbit Aman Press, Kelantan, 1972.
- [6] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. Middle - East Journal of Scientific Research, 20(12), 2014, pp. 2142-2146.
- [7] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.
- [8] Clifford, H. Report on the expedition recently led into Kelantan and Terengganu on the east coast of the Malay Peninsula. JMBRAS, vol. XXXIV (1), 1961, pp. 13-89.
- [9] Linehan, W. History of Pahang. JMBRAS, vol. XIV, part II, 1936, pp. 44-199.
- [10] Mujani, W. K.History in the Quran according to the Risale-iNur. Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 966-972.
- [11] Ismail, A. M. andMujani, W. K. Malay perspectives on the Muslim Malay issues in Malaysia. Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 995-1000.
- [12] Mujani, W. K. and Mat Sidek, R. S. The impacts of Shu'ubite in Islamic historiography, Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 1010-1013.
- [13] Morrah, Patrick. The History of the Malayan police. Journal of the Malayan Branch of Royal Asiatic Society, vol. 36, part 2, no. 202, 1963, pp. 76-88.
- [14] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. Middle - East Journal of Scientific Research, 20(12), 2014, pp. 2142-2146.
- [15] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.
- [16] Ismail, A. S., Jalal, B., MdSaman, M. and Mujani, W. K. 19th century Pahang Islamic scholars in 'A history of Pahang'. In Proceedings of the 2017 International Conference on Education, Economics and Management Research (ICEEMR 2017), Atlantis Press, 2017, pp.192-194.
- [17] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. Middle - East Journal of Scientific Research, 20(12), 2014, pp. 2142-2146.
- [18] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.

361

- [19] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. Middle - East Journal of Scientific Research, 20(12), 2014, pp. 2142-2146.
- [20] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.
- [21] Ismail, A. S., Shah, N. Z., Mujani, W. K. and MdRessad. Scholars' Jihad Ta'limi in Pahang during the 19th Century. Middle - East Journal of Scientific Research, 20(12), 2014, pp. 2142-2146.
- [22] Mujani, W. K., Ismail, A. S., Resad, I. S. A. M. and Shah, N. Z. Sultan Ahmad: The dilemma between the local rebels and British colonialists in Pahang at the end of the 19th century. Asian Social Science, 10(3), pp. 205-210.
- [23] Ismail, A. S., Jalal, B., MdSaman, M. and Mujani, W. K. 19th century Pahang Islamic scholars in 'A history of Pahang'. In Proceedings of the 2017 International Conference on Education, Economics and Management Research (ICEEMR 2017), Atlantis Press, 2017, pp.192-194.
- [24] Mujani, W. K. History in the Quran according to the Risale-iNur. Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 966-972.
- [25] Ismail, A. M. and Mujani, W. K. Malay perspectives on the Muslim Malay issues in Malaysia. Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 995-1000.
- [26] Mujani, W. K. and Mat Sidek, R. S. The impacts of Shu'ubite in Islamic historiography, Advances in Natural and Applied Sciences, 6(6), April, 2012, pp. 1010-1013.
- [27] Mujani, W. K. and Musa, S. N. Arab spring: review of factors for people's uprising in Tunisia, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 558-565.
- [28] Mujani, W. K. andMazuki, A. A. M. Wasatiyyah virtues in Islam, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 542-548.
- [29] Mujani, W. K., Rozali, E. A. and Zakaria, N. J. The wasatiyyah (moderation) concept: Its implementation in Malaysia, Mediterranean Journal of Social Sciences, 6(4S2), 2015, pp. 66-72.
- [30] Mujani, W. K., Ya'akub, N. I., Wan Hussain, W. M. H., Zainol, Z. A. and Kasri, A.Current Islamic theological discourse on middle class, Advances in Natural and Applied Sciences, 6(6), pp. 973-979.
- [31] Ismail, A. M. andMujani, W. K. Malay perspectives on the Muslim Malay issues in Malaysia, Advances in Natural and Applied Sciences, 6(6), 2012, pp. 995-1000.
- [32] Mujani, W. K. Sirah narratives in early Muslim historiography, Advances in Natural and Applied Sciences, 6(6), 2012, pp. 959-965.
- [33] Mujani, W. K. (et al.). The Chinese Muslim community: their economic, political and social involvement in Malaysia, Advances in Natural and Applied Sciences, 6(3), 2012, pp. 417-422.
- [34] Mujani, W. K. The history of the Indian Muslim community in Malaysia, Advances in Natural and Applied Sciences, 6(8), 2012, pp. 1348-1353.
- [35] Mujani, W. K. (et al.). The importance of the Indian Muslim community to the economic development of the Malay society in Malaysia, Advances in Natural and Applied Sciences, 6(8), 2012, pp. 1354-1360.
- [36] Ismail, A. M. and Mujani, W. K. Themes and issues in research on interfaith and interreligious dialogue in Malaysia, Advances in Natural and Applied Sciences, 6(6), 2012, pp. 1001-1009.

- [37] Ismail, A. M. and Mujani, W. K. The missing of moral entity in modern civilization: values and social aspects, Advances in Natural and Applied Sciences, 6(6), 2012, pp. 985-994.
- [38] Mujani, W. K. (et al.). The role of the al-Azhar university in the dissemination of Islamic religious knowledge in Malaysia, Advances in Natural and Applied Sciences, 6(8), 2012, pp. 1411-1413.
- [39] Mujani, W. K. (et al.). The political and economic contributions of the Muslim middle class in Malaysia, Advances in Natural and Applied Sciences, 6(3), 2012, pp. 285-295.
- [40] Mujani, W. K. Sirah narratives in early Muslim historiography, Advances in Natural and Applied Sciences, 6(6), 2012, pp. 959-965.
- [41] Mujani, W. K. The history of the Indian Muslim community in Malaysia, Advances in Natural and Applied Sciences, 6(8), 2012, pp. 1348-1353.
- [42] Mujani, W. K. (et al.). The history of the development of higher education waqf in Malaysia, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 549-557.
- [43] Mujani, W. K. and Mazuki, A. A. M. Wasatiyyah virtues in Islam, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 542-548.
- [44] Ahmad Munawar Ismail, Wan Kamal Mujani andZaizul Ab Rahman. An overview of human nature (Fitrah) and liberalisme in Islamic perspective, International Journal of Civil Engineering and Technology (IJCIET), 9(11), 2018, pp. 415-424.
- [45] Mujani, W. K. and Musa, S. N. Arab spring: review of factors for people's uprising in Tunisia, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 558-565.
- [46] Ahmad Munawar Ismail, Wan Kamal Mujani and Zaizul Ab Rahman. Elements of thinking, identity and legislation in education practices in Malaysia about MaqasidSyariah, International Journal of Civil Engineering and Technology (IJCIET), 9(11), 2018, pp. 384-394.
- [47] Ahmad Munawar Ismail, Wan Kamal Mujani, Zaizul Ab Rahman and NurFida'iySalahuddin. Liberalism, extremism and media in the era of convergence, International Journal of Civil Engineering and Technology (IJCIET), 9(10), 2018, pp.831-840.
- [48] Ahmad Munawar Ismail, Wan Kamal Mujani, Zaizul Ab Rahman and NurFida'iySalahuddin. MaqasidSyariah and safety aspects in infrastructure and health of education practices in Malaysia, International Journal of Civil Engineering and Technology (IJCIET), 9(10), 2018, pp. 820-830.
- [49] Mujani, W. K. (et al.). The history of the development of higher education waqf in Malaysia, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 549-557.
- [50] Mujani, W. K. and Mazuki, A. A. M. Wasatiyyah virtues in Islam, International Journal of Civil Engineering and Technology (IJCIET), 9(3), 2018, pp. 542-548.