INFORMATION SYSTEM STRATEGIC PLAN ANALYSIS TO INCREASE E-COMMERCE SALES USING WARD AND PEPPARD FRAMEWORK

HENDY TANNADY[1], JOHANES FERNANDES ANDRY[2], STEFFI KRISTIANTI[3], ISLAMUDDIN[4], FURQONTI RANIDIAH[5]

[1]Department of Management, Universitas Esa Unggul, Indonesia
[2,3]Department of Information System, Universitas Bunda Mulia, Indonesia
[4]Department of Management, Universitas Muhammadiyah Bengkulu, Indonesia
[5]Department of Accounting, Universitas Muhammadiyah Bengkulu, Indonesia

E-mail: [1] hendy.tannady@esaunggul.ac.id

ABSTRACT

Analysis unit of this study was one of globally recognised e-commerce firms that operates as a consumer-to-consumer (C2C) marketplace. This firm makes the commercial center provide more buyers and provides a wider market advancement, with the help of the web the goods exchanged must be visible to anyone anytime, anywhere, no matter what, but customers can emerge from any country that is significantly different Implementing IS/IT in an organization can increase efficiency in almost all aspects, resources, business processes, markets and management. Business actors are encouraged to make strategic efforts to maintain their competitive advantage due to the rapid advancement of information technology in all fields. A SWOT analysis reveals that this firm is well positioned to take advantage of the current possibilities because of its many strengths and opportunities. This situation gives credence to plans for rapid expansion (growth-oriented strategies). The method used in this study was Ward and Peppard framework, this framework was used to analyze the IS/IT strategic plan to increase the sales number. This study concluded firm infrastructure cover across functions such as QA, financial staff and human resource management. Finance and QA personnel are involved in Enterprise Infrastructure. Shopee uses augmented reality (AR) as a means of developing new technologies. In this company, procurement is the a seller of each firm's stores. Inbound logistics is an activity related to refunds and stock checking, then send to seller that may create opportunities for profit in the future.

Keywords: *E-Commerce, Ward and Peppard, IS/IT Strategic Plan*

1. INTRODUCTION

The e-commerce company that was taken as object of this study was established in Singapore. The company operates as a consumer-to-consumer (C2C) marketplace, which makes the commercial center provide more buyers and provides a wider market advancement, with the help of the web the goods exchanged must be visible to anyone anytime, anywhere, no matter what. Only in places where sellers are found, but also customers can emerge from any country that differs significantly IS/IT implementation within an organization can improve efficiency in almost all aspects, resources, business processes, markets, and management. The development of information technology in all aspects has encouraged business actors today to take strategic steps to maintain their business existence and competitive advantage [1]. In this company, there is a seller which has a terminology of mall. Mall is a platform for stores that sell goods with well-known brands. The nature of administration and openness (accommodation) together, both directly and implicitly affect the persistence of buyers, which if better assistance and availability are given to funders, it will be better [2]. In 2017, the company became the third most popular e-commerce site in Malaysia. On Google Play and iOS App Store, the company has overtaken another e-commerce company in terms of popularity. Financial habits, namely the importance of external market conditions that drive organizational success, the second technique relies on humanistic behavior and ideal models and identifies hierarchical variables

and their parallels with climate as the main driver of organizational performance [3]. In 2020, the company presents their new service that focuses as a platform that sells food from various restaurants that can be purchased by users or customers. Every company must have problems with its business strategy, one of which is this company. The problem that we found with this company was the size of the its applications.

Consumer loyalty is the sensation of joy or disappointment that arises after the contrasting understanding and execution of an object [4]. There are two main factors that can affect the quality of administration, in particular the anticipated assistance and administration of the chainsaw. If it happens that the assistance that is received or felt is in the right form, then the quality of the assistance is considered good. The support of quality is also very poor [5], because it depends on the ability of special groups to provide the type of assistance in an appropriate manner even if the assistance received is higher than expected. Currently, the company has many service features in it. The service features can also be in the form of entertainment, such as their game application. This game application is firm's application feature in the form of games that users can play to get benefits such as coins, vouchers and many other benefits. Currently the game application is growing and there are more variations of the games, so that users will not be bored. However, this has an impact on the size of the application. Any activity or action that one party may offer to another is to have a good quality of administrative processes [6]. The application of e-commerce has a very large size, currently it can reach 2GB. This is a problem for entry-level - mid-range mobile phone users. This problem certainly causes a decrease in their users. Even though many people use this e-commerce to do online shopping, the above problems cause users to end up to use the application and move to other lighter size platforms. In addition, problems were also found from some users such as applications that force close and errors when they want to make payments using the application payment feature.

All businesses and organizations today are looking to maintain their business and their commercial operations, customer loyalty is very important key to manage the competitiveness level. Loyal customers are people who are so happy with a company's goods or services that they want to spread the word about it to others.

Customers who are loyal to a particular brand are more likely to stick with that brand in the future, which means they are more likely to purchase additional items from that brand [7]. At this time the authors will try to analyze and study the system of the firm's e-commerce application by looking for the data on the responses to criticism and suggestions from consumers and also observations to make it easier for the analyzer. Based on digital comparative literature research, the root cause of the problem, the time for each activity process analyzed, and an overview of the root cause with a fishbone diagram can then be identified [8]. Purposeful examination is a test method used by analysts who have a special interest in examining or deciding on samples with the ultimate goal of being sure. Then the focus aspect of this activity is to improve the service system in the organization to become the best service, provide the best solution and also provide the best service performance [9]. The solution that summarized is the company is providing choices regarding the features that users want whether they want to be downloaded or not. This offer can help users reduce the size of the storage memory so that the application becomes lighter. In addition, the company can perform maintenance on the application system so that it can continue to provide the best services and keep the high performance for customers.

The combination of SWOT and Value Chain Activities is used by the company to produce IS/IT strategic plans that analyze and provide competitive advantages based on the opportunities the organization has. Many academics have turned to Ward and Peppard framework and technique as proper alternative for assisting in designing long-term plans for information systems in their organizations [10]. The four stages of Ward and Peppard framework are mapping the IS/IT strategic business plan, IS/IT strategic business and information needs analysis, IS/IT strategy identification process and future portfolio design. The scope of IS/IT strategic planning and the reasons for establishing the IS/IT strategy are determined at this IS/IT strategic planning stage [11][12]. Then the problem is the application has a very large size, it uses up to 2GB of storage. This is a problem for entry-level – mid-range mobile phone users, so that it would cause online shopping users to replace their application with others lighter online shopping application. Facing this risk and obstacle, the company then solves the problem with provides choices regarding the features that users want whether they want to be downloaded or not. By offering this choice, users do not need to download

features that are not needed by them as a user. In addition, problems coupled with applications that often force close and errors when making payments can be overcome by scheduling a regularly maintenance and involving expert teams with higher capability.

2. THEORITICAL BASIS

2.1 Information System

Large-scale information systems and multimedia technology are focus to use data, information and information technology to serve their constituents with the better way. Some of previous studies discussed the scope of information system in the business. IS is often related and perceived with computer-related works in businesses, shifts in management ideology, shifts in public policy and strength key point for any business transformation in any organizations. Information systems consist of related components that collect, process, store, and disseminate information to enable decision making and control within an enterprise. To improve the efficiency and effectiveness of a company's operations, information technology can be a useful weapon [13][14]. It's getting harder to draw a line around system apps, then manage and control them. For example, as the value chain extends beyond the enterprise, supplier and customer systems become part of each other's information architecture [15].

2.2 Ward and Peppard Method

When it comes to IS/IT strategic planning, it is about identifying a portfolio of computer-based applications that will support an organization's business plans and help them achieve their goals, as well as studying the impact of IS/IT on business performance and how it helps organizations make strategic decisions [16]. Human civilization develops along with the advancement of information delivery methods, which we will refer to as Information Technology. The first types of information technology were designed by people in prehistoric times as a means of identifying familiar forms. Until now information technology has progressed, but in a more contemporary structure and distribution method. The definition of information technology covers a wide range of topics, including hardware, software, communication networks and the way data is stored, transmitted, and received [17]. Suggestion

that IT is a variable that can be used to improve the quality and timeliness of organizational intelligence and decision making, thereby promoting organizational performance [18]. Several studies that has undertaken by academic can improve and elevate the IT knowledge from basic to the advance [19].

2.3 IS/IT Strategic Plan

IS/IT strategic planning has the potential to be a competitive advantage for the company. IS/IT strategic planning according to Ward and Peppard, consists of the following three stages such as Input, Output and Applications. The input phase includes the internal and external business environment, the internal and external IS/IT environment and the external and internal IS/IT environment. Strategic management, strategic business information systems, and strategic information technology are the three output phases of strategic management. As a result of this process a portfolio of applications is created that can be used in the future [20]. In a large organization, where there may be a number of different business units, it is likely that each should have its own IS strategy, closely aligned with its business strategy. Some evidences suggest that organizations that have done with this achievement and recognize more direct contributions from IS/IT to business performance. It does not necessarily follow that there must be a one-to-one IT strategy with an IS Strategy in that organization [21]. The focus of the IS strategy is to identify which information systems organization really needs. Organization must serves the principles guidance of the IS strategy. When it comes to technology, infrastructure and certain related skills or how IT strategy focuses on selecting technologies and addressing these issues. When it comes to IT/IS strategic planning, Ward and Peppard can be considered and used to make the comprehensive analysis [22].

3. METHODOLOGY

Some phases have been followed within this study. The study was started with literature study, in this phase we conducted a literature study on the Ward and Peppard framework, Information Systems, IT/IS Strategic Plans. The further phase is data collection, data was collected in this phase, it could helped by literature study from journals, making observations and so on. This study analysed the environment both internal and external. In the phase of internal analysis, we conducted business analysis using Value Chain and SWOT (strength, weakness, opportunity, threat).
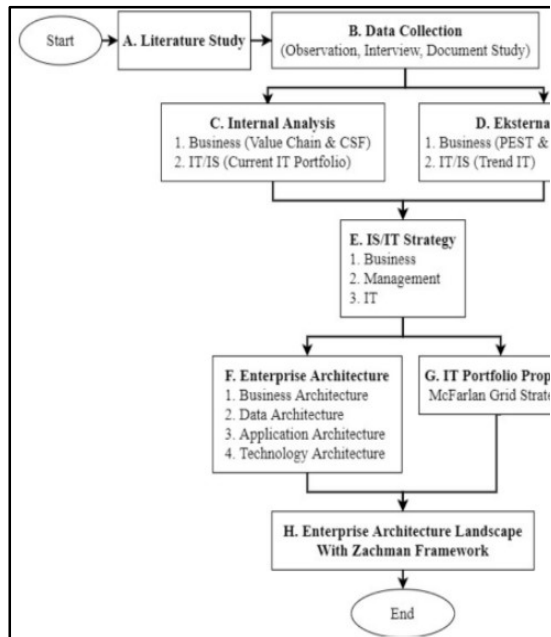
Figure 1: Research Method Framework [23]

This study was also analyzed the IT/IS portfolio that is currently being used. In the phase of external analysis, we conducted business analysis using the PEST (political, economic, social, technological) as well as analyzing IT/IS which is currently trending. IS/IT Strategy - we perform business, management, and IT analysis. Enterprise Architecture, we perform analysis on business architecture, data architecture, application architecture and technology architecture. IT Portfolio Proposal, this phase was completed by using the McFarlan Grid strategy. Enterprise Architecture Landscape with Ward and Peppard Framework, in this phase, researchers created an enterprise architectural landscape using the Ward and Peppard frameworks.

4. RESULTS AND DISSCUSION

According to the literature review conducted, IS/IT strategic planning is the process of finding computer-based applications that will assist the company in implementing its business goals and achieving its business goals. According to Ward and Peppard framework, IS/IT strategic planning has three basic stages such as input, output and the application. Increasing the efficiency and effectiveness of the company's operations is made possible through the use of adequate and reliable information system and technology.

4.1 Internal and External Analysis

SWOT (strength, weakness, opportunity, threat) is a strategic planning technique in a business. The SWOT method looks at internal and external factors to provide a good business strategy. Strength means the strength factor in the business. Weakness means weakness factor in business. Opportunity means opportunity factor in business. Threat means a threat to the business. Value Chain Analysis is an analytical technique in which the company identifies its main and supporting activities. A company's internal processes can be analyzed using a technique known as Value Chain Analysis. Production, sales, maintenance and support of products or services are the main activities. Supporting activities can be in the form of procurement, human resource management, and technology development.

PEST (political, economic, social, technological) is a management technique used to access external factors that have an impact on a business. PEST is very important when setting a business strategy so that the results of the decisions that will be taken can have a good impact on the business. The points that can be explained are political which refers to law, legality, copyright, etc. Economic which refers to things such as currency inflation, economic ups and downs in an area, etc. Social, which refers to things like understanding the needs of the target business consumers. Technological which refers to things like the existing and future roles of technology in business and what their impact is.

4.2 IS/IT Strategy

A series of exercises carried out in observing something in depth ranging from describing, recognizing and finding out to being able to decipher what is implied. Investigation of business opportunities must be carried out with the aim that the bets of misfortune can be expected properly. In term of management analysis, the most common way to calculate and evaluate climatic conditions is to obtain data on capacities and assets that affect the association's results in achieving its vision, mission, and rationale for setting reasonable and reasonable goals. Further stage is the goal would be achieved.

In term of information system and technology analysis, business actors must have strong attention and concern on how to increase their customer satisfaction, customers finds the products and services to satisfy their needs, wants and expectation. Along with the needs of clients, all needs are characterized in depth. Data innovation is

developing so fast. Computerization is applied to work at the business intensity of the organization. Experienced in the field of data innovation, total technology solutions has succeeded in making organizational designs in improving data frameworks to replace the usual examples of information systems and technology management which has become a major source of disappointment in data framework development. Due to the development of IS/IT and how reliable the system developed by the company, it will drive to the optimum capabilities the organization has to be more adaptable and able to bring their services become more excellent and meet the development of markets needs and demand.

4.3 Enterprise Architecture

In the Business Architecture phase, as a rule, business engineering describes a wide variety of business practices, information and data ranging from a hierarchical climate, both inward and outward. Business engineering is the formal and educational designation for associate business experts in surveying, transforming or planning a business. Data architecture is the most common way to normalize how associations collect, store, modify, adapt and use information. Its purpose is to provide relevant information to individuals who need it, when they need it, and help them to understand it. The application architecture is the general plan of the application framework and its supporting foundation to have options to serve business needs or business support embedded in the application. Data architecture is a coordinated system for securing and creating IT to achieve vital goals, commonly it has legal and special sections. The reasonable section combines mission, practical and data prerequisites, framework setup and data flow. Information System Applications are mapped using McFarlan Strategic Grid depending on their importance to the company. Strategically, the management has to provide an occasion for any stakeholder to contribute more in the form of idea generating and critique, this controbution can involve across functional and operational level. This thing is one of big transformation in any organization and needs support from the management.

5. RECOMENDATION
5.1 SWOT

Strength	Opportunity
is a person's main source of income, has many networks in Indonesia and distributes lottery coupons for its users.	works for 24 hours and 7 days, there is a COD feature and has a network of sellers or owners from abroad.
Weakness	**Threat**
The application can only be accessed via the internet. The seller can put a not real photo of items and there are too many sub menus in the application.	There are growing competitors, government regulations can be detrimental at times and there are many fraudsters or hackers in the application.

Table 2: SWOT Analysis SO, WO, ST and WT

Strength + Opportunity (SO)	Weakness + Opportunity (WO)
The company have to do a market survey and provide the product developments that suit with consumer tastes and trends. Keep delivery feature with a pay-on-site (COD) system, expand market share.	The management must have a lot of product availability, a lot of cooperation and improve the quality of administrative management.
Strength + Threat (ST)	**Weakness + Threat (WT)**
Develop strong competitiveness with the objective of customer satisfaction.	Improving the quality of human resources management and increasing the efficiency both of activities and operational cost.

The strength of the company is This e-commerce company is a person's main source of income, has many networks in Indonesia and distributes lottery coupons for its users. The weakness is The application can only be accessed via the internet. The seller can put a not real photo of items and there are too many sub menus in the application. The opportunity is The company's services works for 24 hours and 7 days, there is a COD feature and has a network of sellers or owners from abroad. The threat is There are growing competitors, government regulations can be detrimental at times and there are many fraudsters or hackers in the application. A bank's strengths outweigh its weaknesses as the SWOT matrix shows and the opportunities outweigh the threats. Table 2 shows the result of SWOT analysis, which is a SWOT consisting of strength, weakness, opportunity and threat. It consists of four strategies such as SO (strength + opportunity), WO (weakness + opportunity), ST (strength + threat) and WT (weakness + threat).

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Table 1: SWOT Analysis

Strength	Opportunity
This e-commerce company	The company's services

must develop strong competitiveness with the objective of customer satisfaction and improving the quality of human resources management, they also must increase the efficiency both of activities and operational cost. In other words, this means that a SWOT analysis is very important for companies and organizations because it can describe in depth what the company's strengths and weaknesses are, as well as opportunities and threats.

5.2 Value Chain

The value chain is divided into two activities, namely support activities and primary activities. Support activities - QA and financial professionals are involved in the act of building and maintaining the company's infrastructure. One of the components of HRD is human resource management. The technology development used in this company is augmented reality. Procurement at the company is the seller or seller of every store opened on the platform. Primary activities - Inbound logistics are activities related to refunds, and stock checking. Operations are activities related to receiving orders that enter the system and then confirming automatic payments, then forwarding them to the seller. In addition, in operations there are also activities in the form of tracking orders. Outbound logistics is an activity related to the delivery of goods; at this company, delivery of goods is carried out by couriers. Marketing sales are activities related to free shipping promotions, and twin date promotions.

5.3 McFarland Strategic Grid

The company must aware that the development of the application that suit with market demand is a must-have application not only for short term, but for the future of the business. Management team must be more adaptable and competitive due to rapid market and customers change, by developing continually their system, technology and services will keep their business existence. Using the contemporary IS/IT technology will drive a significantly changing the way of business. A cutting-edge app that has the potential to bring in money in the future, in other words it would be beneficial and profitable for business. Reliable and advanced technology in information system and technology will maintain an organization's current operations run smoothly, the technology and applications are also keep them running and avoid bad situations. Valuable IS/IT is proven able to improve

department and business performance, it also can improve organization effectiveness and efficiency.

6. CONCLUSIONS

A SWOT analysis reveals that the company is well positioned to take advantage of the current possibilities because of its many strengths and opportunities. This situation gives credence to plans for rapid expansion (growth-oriented strategies). Then the results for the SO Strategy are that the company provides product development for consumer tastes, has delivery with a COD (cash in delivery) system and the company needs to expand their market share, which means it has pretty good power in terms of online shopping. In the context of quality assurance and finance, firm IS/IT infrastructure is the activity that connected with QA and finance. Technology development used in this company is augmented reality. To strengthen the operations, management team needs to improve their collaboration with many parties such as supplier and service providers. Management team is expected to improve the quality of warehouse management system, so that some operations activities could run smoothly like inbound and outbound logistics and stock checking. Operations are activities related to receiving orders that enter the system and then confirming automatic payments, then forwarded to the seller.

REFERENCES

[1] H. Ali, B. Hadibrata, and C. D. Buchori, "One Stop Service: Quality of Service and Accessibility to the Investor Loyalty: The Investment Coordinating Board," Int. J. Bus. Commer., vol. 6, no. 01, pp. 38–50, 2016.

[2] S. Riyanto, A. Sutrisno, and H. Ali, "International Review of Management and Marketing the Impact of Working Motivation and Working Environment on Employees Performance in Indonesia Stock Exchange," Int. Rev. Manag. Mark., vol. 7, no. 3, pp. 342–348, 2017, [Online]. Available: http:www.econjournals.com.

[3] R. Filieri, "Marketing Intelligence & Planning Article information," Mark. Intell. Plan., vol. 33, no. 3, pp. 238–257, 2015.

[4] D. Pereira, N. G. K. Giantari, and I. P. G. Sukaatmadja, "The Influence of Service Quality on Satisfaction and Customer Loyalty of Dadirah Cooperative in Dili Timor-Leste," E-Jurnal Ekon. dan Bisnis Univ. Udayana, vol. 5, no. 3, pp. 455–488, 2016.

[5] P. Kotler and K. L. Keller, "A framework for marketing," Sloan Manage. Rev., vol. 32, pp. 94–104, 2012.

[6] H. Hasanah, "Observation Techniques (An Alternative Method of Qualitative Data Collection in the Social Sciences)," At-Taqaddum, vol. 8, no.

1, p. 21, 2017, doi: 10.21580/at.v8i1.1163.

[7] M. M. Hakim, "Information System Strategic Planning in IS / IT Service Provider," JIPI (Jurnal Ilm. Penelit. dan Pembelajaran Inform., vol. 2, no. 2, pp. 118–127, 2017, doi: 10.29100/jipi.v2i2.395.

[8] D. Metro, "Perencanaan Strategis Sistem Informasi Dan Teknologi Informasi Si/ti Pendidik Dan Tenaga Kependidikan (Studi Kasus: Pada Disdikbudpora Metro)," J. Teknol. Inf. Magister Darmajaya, vol. 2, no. 01, pp. 41–51, 2016.

[9] K. C. Laudon and J. P. Laudon, Manajemen Information System: Managing the Digital Firm. 2010.

[10] P.E. Sudjiman and L. Siregar, "Computers in the Decision Making Process," J. TeIKa, vol. 8, pp. 55–67, 2018.

[11] P. K. Geo, E. S. Suraj, N. Rajendran, A. D. Kurukwar, H. Tannady, & Y. Katkamwar, "IoT in Monitoring and Improving Manufacturing Process in Manufacturing Industry," *2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA)*, Coimbatore, India, 2022, pp. 441-444, doi: 10.1109/ICIRCA54612.2022.9985556.

[12] E. D. Madyatmadja, M. Marvell, J. F. Andry, H. Tannady, & A. Chakir, "Implementation of Big Data in Hospital using Cluster Analytics," *2021 International Conference on Information Management and Technology (ICIMTech)*, Jakarta, Indonesia, 2021, pp. 496-500, doi: 10.1109/ICIMTech53080.2021.9535015.

[13] E. Morris et al., "Systems of Systems Interoperability (SOSI): Final report," Syst. Eng., vol. 41, no. 2004-TR-004, pp. 1–53, 2004. http://dx.doi.org/10.1016/j.advengsoft.2013.07.003%0A

[14] A. Wedhasmara, "Strategic Planning Steps," J. Sist. Inf., vol. 1, no. 1, pp. 14–22, 2009.

[15] B. W. Bambang Warsita, "Landasan Teori Dan Teknologi Informasi Dalam Pengembangan Teknologi Pembelajaran," J. Teknodik, vol. XV, pp. 84–96, 2014, doi: 10.32550/teknodik.v0i0.91.

[16] T. Dewett and G. R. Jones, The role of information technology in the organization: a review, model, and assessment, vol. 27, no. 3. 2001.

[17] Amanullah, M. ., Mishra, V. P. ., Mayavan, L. ., Tannady, H. ., Kulkarni, N. ., & Kolandaisamy, R. . (2023). An Effective Double Verification-Based Method for Certifying Information Safety in Cloud Computing. *International Journal of Intelligent Systems and Applications in Engineering*, *11*(8s), 268–275. Retrieved from https://ijisae.org/index.php/IJISAE/article/view/3049

[18] E. D. Madyatmadja, A. Rianto, J. F. Andry, H. Tannady, & A. Chakir, "Analysis of Big Data in Healthcare Using Decision Tree Algorithm," *2021 1st International Conference on Computer Science and Artificial Intelligence (ICCSAI)*, Jakarta, Indonesia, 2021, pp. 313-317, doi: 10.1109/ICCSAI53272.2021.9609734.

[19] T. Sitorus, & H. Tannady, "Synergy, system IT, risk management and the influence on cyber terrorism and Hoax news action," *Journal of Theoretical and Applied Information Technology*, vol. 99, no. 8, pp. 1802–1814, 2021.

[20] R. Fox, "Introduction to Information Technology," Inf. Technol., pp. 1–28, 2020, doi: 10.1201/9781003050971-1.

[21] A. Cullen and M. Cecere, "The IT Strategic Plan Step-by-Step," p. 64, 2007.

[22] H. Tannady, J. F. Andry, & Suriyanti, "The sustainable logistics: Big data analytics and Internet of Things," *International Journal of Sustainable Development and Planning*, vol. 18, no. 2, pp. 621-626, 2023. https://doi.org/10.18280/ijsdp.180232

[23] A. Setiawan and E. Yulianto, "Information System Strategic Planning Using IT Balanced Scorecard in Ward & Peppard Framework Model," Int. J. Eng. Technol., vol. 9, no. 3, pp. 1864–1872, 2017, doi: 10.21817/ijet/2017/v9i3/170903134.