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MANAGEMENT (JISTM)**www.jistm.com**EVALUATING INFORMATION TECHNOLOGY
IMPLEMENTATION SUCCESS FACTORS USING A BALANCED
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This work is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

Today, the introduction of Information Technology (IT) has helped companies to flourish. The Balanced Scorecard (BSc) model has been adopted by many leading companies and organizations to measure their business performance and has appeared as a decision support tool at the strategic management level. This paper aims to evaluate the success of implementing Information Technology (IT) for improving the company's business performance using a BSC model. The study employs the quantitative method whereby an online survey has been distributed among managers in a few companies. The respondents were required to give a response regarding the requirement of implementing IT in the business processes involved in their companies. They were asked a series of questions regarding the four perspectives of BSc which are financial, customers, internal business processes, and learning and growth. By analyzing the respondents' responses obtained through the online survey, it can be observed that implementing IT does help in improving the company's business performance and operational efficiency. The findings show that BSc could assist managers to focus on the company's organizational strategy if it is implemented properly and correctly, and take a balanced view across a range of performance measures.

Keywords:

Balanced Scorecard, Information Technology, Success Factors, Business, Process.

Introduction

Many companies and organizations attempt to do the best thing to compete in their industries. The managers generally will do everything to make their companies to the top of industries. The goal of companies is to be a competitive advantage, however, to reach that point is not an easy thing, many strategies must be made to consider aspects of financial, infrastructure, technology, and human resources. In this context, the advancement of Information Technology (IT) will be very important considering it to be a competitive advantage. For some companies to become a competitive advantage, it can be implemented with framework construct-customer engagement (Kumar and Pansari, 2016). A strategic alliance must be made in the company to achieve a competitive advantage (Ireland *et al.*, 2002).

The stage of IT development has a few points that must concern, that is, starting to make a strategy for the company. This matter will determine how much IT is needed for the company. To determine the strategy of the company that achieves the value of advantage, it will need a key success factor, when the result can give a form of requirement for the company. Technology can give innovation which is very important for a company (Porter, 1985). For the company business, it must be made a model business using IT (Baden-Fuller and Haefliger, 2013). To get the right thing key success factors can be seen from a financial perspective, customer perspective, internal perspective, and learning and growth perspective, thus a Balanced Scorecard (BSC) model could be used to achieve the results.

The BSC could be used by every organization, not just for the company only, but it can be used by the government too (Kloot and Martin, 2000). The main research question guiding this study is: 'How can the companies make a good system for facing the competitor and have the right IT to be the competitor's advantage?' Therefore, this paper aims to evaluate the success of implementing Information Technology (IT) for improving the performance of companies using a BSC model.

This paper is structured as the following. This paper contains four sections excluding the introduction section. Section two presents the review of the Balanced Scorecard (BSc). Section three explains the method of this research and section four presents the results and discussion. The last section, namely section five is a conclusion of the research.

Balanced Scorecard

The rise of the Balanced Scorecard (BSc) model is a revolution against traditional reliance on accounting statements (Al-Dweikat & Nour, 2018). It is a set of financial and non-financial measures that reflect the key and important factors that make the organization succeeds and nowadays become a tool for organizations to improve their performance in general. According to Chintengo *et al.* (2017), Kaplan and Norton developed BSc in 1992 and emphasize the importance of an evaluation tool that covers all relevant areas of corporate performance measurement systems. Kaplan and Norton claimed that the scorecard with the four perspectives such as financial, customers, internal business processes, and learning and growth provides an excellent scorecard to face the challenges. However, Asiedu (2015) argues that the tool is used to define and monitor performance values such as customer value, internal business, and employee performance.

As explained by Keefe in his paper in the year 2019, the financial perspective of BSc has the purpose of increasing shareholder values. Financial measures are supported by three different

points in the framework of BSc which is clients, internal process, and employees. This financial measure consists of three aspects beneficial to the company, which is business growth, value creation, and profitability.

The second category for BSc is customers, and as explained by Keefe (2019) BSc translates the mission of a company into five measures from customer perspectives such as lead time, cost, service, performance, and quality. Customer perspective is positively parallel to internal business perspective as evidenced by the fact that the better the five measures or aspects, the customers are satisfied.

The third category of BSc is the internal business process. Keefe (2019) explained that internal process evaluation depends on financial indicators and time-based, and quality measures that are a little different from customers' perspectives. The internal business process is concerned with all internal activities that characterize the organization to achieve customer satisfaction and achieve the goals of the organization.

The fourth category of BSc is an innovation that is required to elucidate meeting customers' expectations, enhancing business processes, and reaching financial targets for the whole company. However, according to Nisha (2017), while the relationship between customers' perspectives and internal business perspectives is more positive, it cannot be said the same for the relationship between the non-financial perspectives and the learning and growth perspective.

The research conducted by Al-Dweikat and Nour (2018) shows that the financial status of an organization or company that implements BSc is more positive than organizations that do not implement BSc. Implementing BSc in companies has also shown a positive change in terms of employee motivation, strategic planning, and improved control (Kiragu, 2005). However, despite BSc being useful for the company, implementing and maintaining a balanced scorecard might face a few obstacles. To ensure business success using BSc, a considerable amount of commitment will be needed by key stakeholders (Martisons *et al.* 1999).

From the review done on BPMN and BSc, it was found that each has its method of operation. As for BPMN, the processes are represented by using constructs that can be grouped into four categories which is flow objects which represent events, activities, and gateways, connection objects such as control flow, message flow, and associations, artifact objects such as data objects, data stores, data input and data output and swim lanes which is pools and lanes within the pool. Events can be partitioned into three different sets which are start events, intermediate events, and end events. A start event represents the start of a process while an end event represents the end of a process. An intermediate process is something that might happen in the middle of the process execution. An activity is described as either a task or subprocess that can be used to provide some business service, receive messages, or send messages while a gateway is described as a connector used to control sequence flows.

As for BSc, the first process BSc is to clarify and translate vision into strategy. It is important for an organization, or in this case, a company to first map out some consensus on where things currently stand. From the assessment made, the company may formulate a strategy. Then, the company is required to communicate and link strategic objectives and measures. In this step, the building block of the strategy is developed. Then, the third process of BSc is to plan, set

targets, and align strategic initiatives. This step will allow the company to map out the strategy which will create a chain of how customers and stakeholders are satisfied with the company's products. The final step is to enhance strategic feedback and learning. This step is to ensure that the developed strategy is working and if there was any deficiency, the strategy mapping will be revised to be better. This research will be using a BSC to evaluate the success of implementing Information Technology (IT) in companies.

Method

This research employed a quantitative research method in addressing the research question. This research is done through an online survey of companies that have implemented IT in their settings. The questionnaire contains two sections: the first section deals with demographic information or the profile of the company. The second section of the survey requests information about the success of implementing IT into their company process. As the sample size of this research is done with only 22 respondents, descriptive research is used where the results obtained from the survey are used to compare how many respondents agree or do not agree with the implementation of IT in each business process in their company. The questions asked are based on the four perspectives of BSC. The data analysis is done using statistical software. From the results, an observation is made where conclusions are drawn.

Results and Discussion

The results are obtained through an online survey which consists of 39 questions. The survey was separated into two sections where section A asks about the profile of the respondents and the company they work for, while section B asks the respondents about the implementation of the IT success factors. Section A consists of eight questions with questions five, seven, and eight being multiple selection questions and Section B consists of thirty-one questions with 'Yes' and 'No' questions.

Profile of the Company

Type of Company

Most of the respondents involved in this study are in the service business, which is 77% out of the 22 respondents while 14% out of the 22 respondents are working in a company involved in the business trade. However, only 9% out of the 22 respondents are working in a company involved in the manufacturing business.

Duration of Company Establishment

32% of the 22 respondents worked in a company that is established for more than 50 years while 27% of the respondents worked in a company that is established for less than 30 years. 23% of the respondent worked in a company that is established for 10 years while around 14% of the respondents worked in a company of less or equal to 50 years.

The Availability of IT in The Company

The majority of the respondents worked for a company with the availability of IT which is 91%, while the rest (9%) works in a company that does not implement IT.

Platform to Operate IT Unit

Most of the respondents (73%) answered that the workers used an in-house platform to operate IT units, while the rest (27%) answered that they used an outsourcing platform to operate IT units.

The Use of IT in Business Process

Most of the respondents agreed that the Customer Services and Finance business process used IT while only 1 respondent agreed that Engineering Consultancy and Safety Department used IT. 12 respondents agreed that Sales, Employee Data, Accountancy, and Data Communication among Employees used IT while 11 respondents agreed that Delivery, Order and Purchasing along with Recruitment, Marketing and Data Communication Between Centre and Branches used IT.

Ten (10) respondents agreed that the process of recording the Absence of Employees implemented the use of IT. Nine (9) of the respondents, however, chose Career Development, Estimation, and Market Evaluation as one of their answers to the question of which business process heavily uses IT. Eight (8) respondents chose Delivery Monitoring and Marketing Monitoring as one of their choices for the usage of IT. Other than that, seven (7) respondents chose three business processes that use IT which are Preparation, Production, and Supplier Networking. Besides that, 6 respondents chose Product Inspection as one of their answers to this question. One respondent chose Engineering Consultancy and Safety Department as one of their answers to the question.

Duration of IT Implementation in The Company

Most of the respondents (73%) work in a company that has implemented IT for more than 15 years while only 14% of the respondents work in a company that has implemented IT for less than 10 years. 9% of the respondents work in a company that has implemented IT for less than 15 years while the rest (4%) works in a company that has implemented IT for less than 5 years.

The Processes in which IT Should Be Critically Implemented

Most of the respondents agree that IT should be critically implemented in Finance while a respondent agrees that each section should critically implement IT. 16 of the respondents give the opinion that Customer Services, Procurement and Employee Data should be critically implemented while 15 agree that IT should be critically implemented in Delivery, Payroll, and Career Development. 14 respondents agree that IT should be critically implemented in 5 processes which are Recruitment, Accountancy, Marketing, Market Analysis, and Data Communication among Employees. Other than that, out of the 22 respondents, 13 of them view Order and Purchasing, Preparation and Absence of Employees as processes that should implement IT critically. Of the 22 respondents who answered the survey, 12 view the processes of Estimation and Processing as the process that should be critically implemented in IT. Besides that, 11 of the respondents view Marketing Monitoring and Supplier Networking as processes that should critically implement Information Technology. 10 of the respondents agreed that Delivery Monitoring, Production, and Product Inspection Data Communication Between Centre and Branch are the processes that should implement Information Technology critically.

The Process Where IT Will Be Developed Shortly

Most of the respondents believed that the process where IT will be developed shortly is 'market analysis', while one respondent viewed that 'supplying information to everything that the company wanted' was the process that would be developed through IT.

Information Technology Implementation Success Factors

This section presents the factors that contribute to the success of implementing IT in companies. Table 1 shows four perspectives of balanced scorecards (BSC) which are financial, customers, internal business processes, and learning and growth innovation. The details are as follows.

Table 1: Balanced Scorecard (BSC)

Perspectives	BSC Parametric	Results
Financial	1. Effect on market value	95%
	2. Effect of financial warning	73%
	3. Increase the company's revenue	90%
	4. Reduce operational costs	100%
	5. Affect on the cost structure improvement	77%
Customers	1. Increase the number of customers	95%
	2. Satisfaction with the customer	100%
	3. Services to customers	95%
	4. Affordable selling prices for customers	86%
	5. Increasing customer loyalty	90%
Internal Business Process	1. Making company plan	95%
Learning & Growth Innovation	1. Improving the quality of products produced	95%
	2. Increase the brand of the company's products	100%
	3. Building partnership relationships	100%
	4. The company's operational turnover	95%
	5. Creating a new product	95%
	6. Creation of new service delivery	95%
	7. Improving the work environment	100%
	8. Improving the social community	95%
	9. Implement the regulations	95%
	10. Production process	95%
	11. The product delivery process	95%
	12. Increasing the knowledge of employees	100%
	13. Improving the employee training process	90%
	14. Improve the capabilities of the employees	95%

	15. Improve work culture with the adjustment	95%
	16. Add leadership skills	100%
	17. Align work inter-department	86%

Financial Perspective

The results indicated that:

- Most of the respondents (95%) agreed that the use of IT by the company does affect the company's market value.
- Most of the respondents (73%) believed that the use of IT causes a cost effect that serves as a financial warning for the company, while 27% of respondents do not believe IT causes a cost effect.
- Most of the respondents (90%) believed that IT can be used to increase their company's revenue while only 10% of respondents do not believe that IT cannot be used to increase the company's revenue.
- All the respondents (100%) agreed that IT can be used to help reduce the operational costs of the company. Most of the respondents (77%) believed that the reduction of operational costs will help in improving the cost structure of the company.

Customers Perspective

The results showed that:

- Most of the respondents (95%) agreed that using IT increased the number of customers compared to before the use of IT. Customers' satisfaction can be increased as using IT in the internal business of a company could increase productivity. As stated before, when internal business becomes more positive, customers become more satisfied which could lead them to use the company's product more.
- All of the respondents (100%) believed that IT can provide satisfaction to customers.
- Most of the respondents (95%) believed that IT does provide punctuality in providing services to the customers, and only 5% of respondents do not believe it.
- 86% of the respondents believed that IT does assist in lowering or offering more affordable selling processes to the customers while 14% of the respondents believe that it does not.
- Most of the respondents (90%) believed that IT can help in increasing customer loyalty while 10% of the respondent does not believe that it can help the company.

Internal Business Process Perspective

The results revealed that most respondents (95%) believed that IT helps in making a company plan as opposed to the one respondent who disagreed.

Learning and Growth Perspective

The results showed that:

- Most of the respondents believed that IT can help in improving the quality of a produced product with 21 (95%) respondents answering, 'Yes' and one respondent answering 'No'.
- All the respondents believed that with the implementation of IT, the brand of the company's company can be increased.

- All the respondents believed that IT helps in building partnership relationships between their company and other companies.
- Most of the respondents agreed that using IT helps in the company's operational turnover with 21 (95%) voting for 'Yes' and only one respondent voting for 'No'.
- Most of the respondents agreed that IT in the company help in the process of creating a new product with 21 (95%) agreeing and one respondent disagreed
- Most of the respondents (95%) agreed that using IT does help in creating new service delivery processes while only one respondent disagreed.
- Regarding the question of whether using IT can help in the process of improving the work environment or the opposite, all the respondents (199%) agreed on that matter.
- Most of the respondents believed that the availability of IT does help in improving the social community within the company as opposed to one respondent who disagreed.
- 19 of the respondents believed that IT can help in implementing the regulations that have been made in the company while three of the respondents disagreed.
- Most of the respondents (95%) voted 'Yes' for their opinion on whether IT helps in the company's production process while only one respondent voted for 'No' which stands for the opinion that IT does not help in the company's production process.
- 21 (95%) of the respondents agreed that the use of IT helps in the company's production process while only one disagreed with the statement.
- All of the respondents (100%) agreed that the use of IT does help in managerial terms related to increasing the knowledge of employees and no one is opposed to that opinion.
- 20 of the 22 respondents agreed that using IT could help in managerial terms related to increasing the knowledge of employees while two disagreed.
- 21 of the 22 respondents believed that IT helps in improving the employee training processes that companies provide to employees while only one respondent disagreed.
- 21 of the 22 respondents believed that implementing IT can help to improve work culture with the adjustments of the current industrial era while only one respondent disagreed.
- All the 22 respondents believed that IT can add leadership skills for managers and executives.
- The results obtained from the online survey show that 19 of the 22 respondents believed that using IT helps in aligning work between departments while only 3 respondents do not believe using IT could help them in aligning work between departments.
- Most of the respondents believed that IT can help with communication between employees. This implies that using IT or a product of IT can ease the communication between employees as each company does have different departments. The time taken to communicate between employees in different departments can be minimized.
- 20 of the respondents believed that IT helps in managerial collaboration between teamwork while two of the respondents disagreed that IT helps in managerial collaboration between teamwork.
- 20 of the 22 respondents believed that using IT assists them to develop the skills needed while two of the respondents disagreed. This result showed that implementing IT helps in developing new skills as employees can learn how to operate a product of IT such as the case of a machine.

Conclusion

The study aimed to evaluate the success of implementing Information Technology (IT) to improve the company's business performance using a BSc model. The study has revealed some interesting findings that border on the use of the BSc model to evaluate the success of IT implementation. Firstly, IT is an important aspect of companies where IT can be seen in every process in the companies, ranging from managerial to financial aspects. With the implementation of IT, employees of the companies are found can work more easily.

Based on the four perspectives of BSc, many companies have implemented BSC for a long time and the implementation has helped the companies to grow and improve their performance. Secondly, the study has shown that the implementation of IT in companies has a significant impact on their business performance. From the financial perspective, the findings demonstrated that the company does affect the company's market value. Meanwhile, from the customer perspective, customers' satisfaction increased as using IT in the internal business of a company could increase productivity. When the internal business becomes more positive, customers become more satisfied which could lead them to use more products of the company, and the findings were consistent with the findings of Utami, Prastiwi, and Ningsih (2020). Regarding the internal business process perspective, the findings revealed that IT helps in making a company plan. Furthermore, from the learning and growth perspective, the findings showed that IT can assist in improving the quality of products.

This study has limitations such as a small sample size. Future studies may explore more companies and organizations that implement IT to enrich the findings such that the results may be generalized. Also, there is a need to further examine the impact of IT implementation on business performance over a longer period.

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