

E-Commerce System for an Electronic Product (Case Study of an E-Commerce Company)

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Abstract—*The present study intends to aid e-commerce companies in making decisions concerning their midterm planning for new product expansion related to existing watch products or other products that might be easily distributed by packing well and being dispatched by an expedition company. This study helps a company's decision-making process by creating a cost-benefit analysis for electronic products under two conditions: either selling electronic products by using the company's current existing e-commerce system, which is connected with their previous watch product, or selling electronic products through the company's brand-new e-commerce system, which is completely separated from their previous watch product. This study uses a holding company and its e-commerce website, named Jamtangan.com, as its sample and adopts a method of cost-benefit analysis, such as the present value method, net cost-benefit ratio, and return on investment. This study helps the company make a better decision on which of the sales channels is profitable: either selling electronic products through the company's existing e-commerce system, which is connected with their previous watch product, or selling electronic products through the company's brand-new e-commerce system, which is completely separated from its previous watch product. From this study, the company also makes a better decision on how to expand its new product in the face of business challenges in the global economy and disruptive innovation phenomena.*

Keywords—*cost-benefit analysis, e-commerce system, electronic products, disruptive innovation, business challenges, global economy*

I. INTRODUCTION

E-commerce refers to buying, selling, and marketing goods and services through an electronic system [1]. These activities might be related to Internet and computer use by a web browser for buying and selling products [2]. Anyone who can use a computer, has an Internet connection, and has a payment method for their goods and/or services might participate in e-commerce [3]. E-commerce is important for enterprises because it helps them expand their market, find suppliers across the world, reduce costs, and reduce processing times [4].

Is anything that can be offered to a market for attention, ownership, use, or consumption to satisfy a consumer's needs [5]. Therefore, an electronic product is anything that needs electric flow to operate that is offered to the market. Electronic products include smartphones, tablets, notebooks, computer accessories, video recorders, audio systems, and other gadgets that might be packed well and dispatched.

PT. SID is one of the new companies preparing its holding company for expansion. PT. SID's holding company is an e-commerce B2C company. It sells fashion items by

using a website and a marketplace website. It sells its product on Jamtangan.com as well as on marketplace websites such as Lazada.co.id, Bukalapak.com, Tokopedia.com, Blibli.com, Jd.id, Elevenia.co.id, Shopee.co.id, and Mataharimall.com.

This study is important because at present, the company is reviewing several other products similar to watch products that are wrapped neatly and then sent by an expedition company. One of products is an electronic product sold either through the company's existing e-commerce system, which is connected with their previous watch product, or the company's brand-new e-commerce system, which is completely separated.

This study is also significant because the number of Internet users is increasing from year to year, and there is a change in the usage pattern from using desktop computers to electronic products that can be easily carried anywhere (e.g., smartphones, tablets, laptops, and other gadgets). In 2016, there were more than 132.7 million Internet users in Indonesia, of whom more than 92.8 million used electronic products that could be carried anywhere easily. There are more than 72,256,000 users who used two or more than five electronic products for Internet surfing. From the supply perspective, Internet users for business, commerce, and e-commerce purposes increased to more than 10,400,000 users in 2016. From the demand perspective, Internet users accessing commercial content (e-commerce), knowing the Internet as a marketplace to buy and sell goods and services (e-commerce), and using social media for trading also increased significantly. In 2016, more than 123,500,000 internet users had access to commercial content, of whom more than 130,800,000 had good knowledge about the Internet as a place for buying goods and services. Moreover, more than 125,500,000 users have used social media for trading [6].

Increasing demand for e-commerce electronic products is also reflected in the number of Internet users who have ever carried out online transactions (e-commerce), specifically to buy household products, such as smartphones, tablets, laptops, computer peripherals, video devices, audio, and other gadgets; online transaction security (e-commerce); and online banking services (for e-commerce payments) that changed user opinions from unsafe to safe. The greatest changes in the consumption of Indonesian products ranged from food, beverages, and tobacco to information and communication equipment (smartphones, tablets, laptops, and other gadgets). In 2016, more than 84.2 million internet users in Indonesia had performed online transactions, with more than 29.4 million users having purchased household products. The year 2016 also recorded more than 83,728,000 users having paid through online payment transactions, with

more than 30,000,000 users in the range of one month, because more than 92,000,000 users believed that present-day online transactions are safe enough and more than 93.4 million users also believed that online banking services are safe [6]. From January 2016 to August 2017, retail sales index recorded information and communications equipment products as the highest consumed products, which was earlier occupied by food, beverage, and tobacco products. The retail sales index of information and communication equipment continually increasing from 367.4 to 458.2 compared to the same month in the previous year, rising nearly 3–5 five times [7].

This implies that selling electronic products through the existing e-commerce system might lead to a new and permanent e-commerce system without serious financial risk due to cost efficiency, but that choice might have a long-term strategic impact on the existing company's value and image. Selling electronic products through the existing e-commerce system that is related more to selling electronic product on a company's e-commerce website by changing its domain/url than adding an electronic product menu and adjusting the layout.

On the contrary, selling electronic products through a brand-new e-commerce system that is completely separated from the existing one might be a temporary e-commerce system with serious inherent financial risk due to the nature of new investments, with no long-term strategic impact on the company's existing value and image. This approach minimizes uncertainty about the electronic product's success in the future. Selling electronic products through a brand-new e-commerce system that is completely separated refers to an all new computer network, including recruiting new employees specifically for electronic products until it is ready to operate as much as investment on *jamtangan.com*. This decision-making problem is considered in the present study through a cost-benefit analysis.

II. LITERATURE REVIEW

A. E-Commerce System

E-commerce refers to buying, selling, and marketing goods and services using an electronic system [1]. These activities might be Internet based and relate to computer usage via a web browser for buying and selling products [2]. Anyone who can use a computer, has an Internet connection, and has a payment method for paying for the goods and/or services might participate in e-commerce [3]. Earlier e-commerce-related studies stated that most SMEs in Indonesia have planned to adopt higher e-commerce rates but are still constrained by human resource factors, information sources, and other drivers [8]. Obviously, this effort needs government support through policy making about knowledge acquisition, skills, and technical infrastructure financing [9].

Easy payment methods, trust, benefit, and information quality have significant influences on purchase decisions [10], although technological readiness is still moderate owing to disparities related to gender, age, education level, and income [11]. However, adoption of mobile, digital, online communications technology, and information systems by microenterprises is far easier than before [12]. By reading the profit and loss statements, e-commerce companies can capture consumer behavior, which provides a better understanding of their customers' experiences, expectations, and decision making [13]. Social-network marketing has a strong influence on competitors, experts, and customers'

social influences [14]. Small organizations that recognize the potential of a more complex user mark the beginning of e-business implementation [15].

Investment cost in an e-commerce system might arise from the cost of creating a brand-new e-commerce page, setting up a computer network, recruiting employees, building business value, preserving a corporate image, and maintaining e-commerce systems during its economic lifetime. Costs also might arise from the cost of adopting e-commerce for developing corporate websites, joining a B2B marketplace website, and communicating via electronic media [16] as well as providing structural guarantees to gain e-commerce trust [17]. To ensure e-commerce transactions, safety can be evaluated via e-commerce security factors consisting of several criteria [18] because future investors pay more attention to how a site is able to create long-term value and maintain its operations in the short term [19]. They also consider the number of satisfied customers who become loyal customers [20].

B. Cost-Benefit Analysis of E-Commerce System

Earlier studies mentioned that a cost-benefit analysis with a cost-displacement approach shows that portal implementation will be profitable for a company. Its tangible benefits are obtained from postal cost savings, printing, telecommunications, and paper (office supplies). Intangible profits are achieved from customer service improvement and acceleration of service [21]. A similar cost-benefit analysis could be applied to implementing ERP systems in a company [22]. Cost-benefit analysis also includes security aspects, unlike widely used modeling for security-investments evaluations. Recent research suggested that modeling allows security benchmarking and measurement [23].

Studies on e-commerce implementation were conducted by Dell Computer for the purpose of building close customer relationships [24]. P.D. Garuda Jaya facilitated a customer ordering system [25], and P.T. Chingmix Berhan Sejahtera originated their technology-development strategy [26]. Java Trend Distro created its e-commerce website [27]. It is surprising that the AliExpress website was unable to meet their users' expectations in Indonesia [28].

A company can avail itself of economic benefits by making an appropriate investment decision; hence, a manager must know the company's funding capabilities and potential benefits that will be derived from the proposed capital expenditure plan [29]. The amount of cash inflows and outflows as well as timing should be estimated to obtain an accurate picture to realize the capital expenditure plan.

Cost (Cash). Cost (cash) in the form of cash outflow includes an initial investment starting from the purchase price (or down payment), installation costs, and the cost of preparations until the asset can be used. Preparation costs include interest and taxes during the construction of assets requiring construction of buildings or other major assets, employee death costs, costs for adjusting and testing machines for assets using the latest technology, and the cost of purchasing computer software or the cost of programming services for information system assets [29].

Benefits. Benefits come in the form of cash inflows received during assets' economic life in revenue and/or cost savings. Cost savings generally achieved by reducing the quantity of raw materials, decreasing the frequency of rework, decreasing

the quantity of defective goods, and decreasing maintenance expenses. Cost savings also include decreases in direct labor costs and production support costs for highly automated machine capital expenditures as well as inventory storage expenses [29].

Anticipated Inflation on Estimated Cash Flow. Anticipated inflation on estimated cash flow is the potential of continuously increasing goods value in general that might occur during the lifetime of capital expenditures. Inflation is a common phenomenon whereby future currency values are smaller than the current values; therefore, to anticipate future impairment, cash flows from capital expenditure plans should be adjusted to reflect the anticipated effects of price changes [29].

Capital Cost. The cost of capital reflects the expected rate of return on an investment decision with a certain level of risk taken [29]. The component of the cost of capital—that is, the specific cost of a particular investment decision—is called the marginal cost of capital.

Cost-Benefit Analysis. A cost-benefit analysis is a method used to determine the profit or loss amount and project feasibility [30]. In cost-benefit analysis, benefit and cost comprise a unity that cannot be separated:

By using cost and benefit analysis, it can be seen how much cost might be incurred and the benefits that might be received on a proposed project. By comparing its benefits with its costs, a project is termed as feasible or infeasible. Cost and benefit analysis might be used as a planning tool to determine feasibility of a project. Evaluating and evaluation tool to determine whether a project is in accordance with the desired goals.

Ratios and methods that might be used to define the relationship between its costs and benefits are as follows:

1. Present value method
2. Benefit–cost ratio
3. Return on investment (ROI)

C. Investment Decision Character Must be Analyzed by Cost-Benefit Analysis

The investment decision of whether to sell electronic products through the existing e-commerce systems or through a brand-new e-commerce system that is distinct from the prevalent system needs careful consideration due to the following characteristics [31]:

1. It involves a huge investment
2. It requires a financial commitment for more than one year
3. It provides cash-flow benefits in the subsequent years
4. It influences future corporate strategy; and
5. It significantly influences a company’s wealth.

This investment decision must be carefully analyzed because it determines the decision-making process, which has a permanent, nonreturnable impact, influences a company’s long-term strategy, faces an uncertain future, and involves serious financial risks [31].

III. RESEARCH METHODOLOGY

A. Data-Collection Techniques

Data were collected through documentation of past events records [32]. Documentation might include records, history, reports, regulations, and company policies.

B. Data-Analysis Techniques

Data were examined using the cost-benefit analysis. It is a method to compare the estimated costs and benefits by evaluating the proposed system. Cost-benefit analysis was used because this study compared two alternatives, selling electronic products for financial decision making related to the company's cash flow. The ratios and methods used to define costs and benefits relationship are as follows:

1. Present value method
2. Net benefit–cost ratio
3. Method of return on investment

Present Value Method

The present value method converts cash flows in future into present value by using a discounting factor equivalent to the cost of capital interest rate. The present value can be calculated as follows:

$$\frac{PV = C_1}{1 + r} \quad (1)$$

where

PV is the present value, C1 is the cash flow, and r is the discount rate.

The project is accepted if $PV > 0$ or rejected if $PV < 0$.

Net Benefit–Cost Ratio

Net benefit–cost ratio (net BCR) is the ratio of the present value of benefits to the cost. This ratio is used to determine the number of the times that benefits might be obtained from the cost incurred. The project is accepted if $\text{Net BCR} > 1$ and rejected if $\text{Net BCR} < 1$. In this ratio, the criteria for rejection or acceptance might be determined by comparing the calculated results with the minimum accepted Net BCR. If Net BCR exceeds the minimum level, the project will be accepted or rejected otherwise.

Return on Investment (ROI)

ROI is a measure of a company’s ability to generate returns from its overall funds invested in assets (Munawir, 2002). A project is accepted if $\text{ROI} > 0\%$ and rejected if $\text{ROI} < 0\%$. In this ratio, the criteria for rejection or acceptance are also determined by comparing the calculated results with minimum accepted ROI. If ROI exceeds the minimum level, then the project is accepted; otherwise, it is rejected.

IV. DISCUSSION

The importance of this study was emphasized earlier because the company is currently reviewing alternatives for selling electronic products through the existing e-commerce systems and connections or through a new e-commerce system that is distinct from the existing ones.

The estimated cash outflows from selling electronic products through the existing e-commerce systems connection might be generated through the cost of changing the webpage address (domain/url), adjusting the layout, changing the number of ongoing contacts, with the third party changing costs that originally loaded one product type that will now become two product types, and various other costs incurred until the webpage address is changed and normally run as the old webpage. The estimated cash outflow from selling electronic products through a new e-commerce system that is separate from the existing ones might arise from the cost of creating new e-commerce page addresses (domain/url), new computerized networks, a new workforce specifically recruited for electronic products, and various other costs incurred until it ready to operate with the company's estimated investment in its previous e-commerce website, *jamtangan.com*. Based on the exposure, the estimated cash outflow from selling electronic products through the existing e-commerce systems might be lower than that through a new e-commerce system that is separate from the existing ones.

However, the estimated cash inflows from selling electronic products through the existing and connected e-commerce systems might come from the cost savings from creating a new webpage address (domain/url), new computerized networks, a specifically recruited new workforce, and various other cost-saving benefits until it is ready to operate. While the estimated cash inflows from selling electronic products through a new, distinct e-commerce system might arise from building business value and corporate image, cost savings from a new e-commerce system would be lost/mixed and difficult to separate if the company chooses to sell electronic products through the existing e-commerce systems. Based on this exposure, it might be concluded that the estimated cash inflows from selling electronic products through the existing and connected e-commerce systems might be lower than that from selling electronic products through a new e-commerce system that is separate from the existing ones.

Various factors need to be considered to choose from the alternatives, such as cash flow estimation, both cash outflows and inflows (savings), anticipated inflation rate, fixed-asset depreciation, which is influenced by the use of the accelerated cost recovery system (ACRS) and the modified results (MACRS), income tax, and the discount rate.

Furthermore, the value of the costs and benefits from each alternative is analyzed using the present value method, cost-benefit ratio calculation, and return on investment for appropriate decision making on the two alternatives for selling electronic products. Based on this decision, companies could also develop a strategy for expanding their other new products to face business challenges in the global economy and the phenomenon of disruptive innovation in future.

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