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THE INFLUENCE OF INFORMATION TECHNOLOGY, INFORMATION SYSTEM, AND INFORMATION MANAGEMENT CAPABILITY ON ORGANIZATIONAL PERFORMANCE OF PT. XYZ

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ABSTRACT

One of the problems faced by the pharmaceutical company in Indonesia is how to improve organizational performance. This research seeks to analyze the influence of information technology, information systems, and information management capability on organizational performance by taking into account a pharmaceutical company PT XYZ. The source of data was obtained from questionnaires. The total number of respondents sampled by non-probability sampling method was 135 respondents as Area Managers spread throughout Indonesia. The method to analyze the data was by employing Partial Least Square-Structural Equation Modeling (PLS-SEM). The results show that information technology, information systems, and information management capability have a positive and significant influence on the organizational performance of PT XYZ. These suggest that PT XYZ needs to give attention on how using an integrated information system which supported by information technology, and equipped with good data or information management capabilities to improve its organizational performance. This can be done by easing access, presenting data that summarizes all information correctly, and correcting the format to assist decision-making as well as management's commitment to continuing to develop information systems to improve the organizational performance of PT. XYZ.

Keywords: *Information Technology, Information System, Information Management Capability, Organizational Performance*

1. INTRODUCTION

PT. XYZ is a pharmaceutical company operating in Indonesia since 1974. Starting its business as the first allergen importer in Indonesia, PT. XYZ has become one of the leading companies in Indonesia. Apart from being productive in launching new products, PT. XYZ also consistently develops information systems based on information technology which is believed to be a tool for improving organizational performance. One of the concrete forms is the development of an online system for Sales Department started in 2009. Further development carried out in 2016 resulted in the online system that is used today, containing four main panels, namely (1)Customer Database, (2)Sales, (3)Distributor inventory, and (4)Product Management.

Currently, the online system can be utilized by all field forces according to their needs. The position level that uses it most often is Area Manager (AM). However, in its use, the employees complain about several problems, such as the slow process of loading pages in the system and the uneven ability or understanding of its users to maximize the functions of this system. These problems affect the organizational performance of the company to reach the objectives of the company.

In many previous studies, several factors have been pointed out as factors influencing organizational performance. Oyewobi et al. (2016), for instance, revealed that managerial decision-making style and organizational structure have an interactive effect on organizational performance and strategy. Also, organizational characteristics can moderate the relationship

between competitive strategy and organizational performance. Apart from that, organizational performance is also strongly influenced by the company's culture of exploration and exploitation, which will ultimately influence success and performance (Matzler et al. 2013).

Furthermore, Navimipour et al. (2018) proposed a model that evaluates the influence of information technology, organizational culture, and employee satisfaction on organizational performance. The findings indicate that the use of information technology by organizations can produce higher performance. The variations that emerge in organizational performance are also explained by the extent to which information technology is used to support and improve the company's core competencies (Ravichandran et al., 2005).

Also, Maiga et al. (2015) stated that an integrated information system can be one of the determinants of maintaining an organization's competitive advantage while improving the organization's performance. Even though the impact of information systems is less significant on company profits, it seems that information systems can have a positive influence on organizational performance.

However, little is known about studies on factors affecting organizational performance concerning the pharmaceutical company. To fill this gap, this study aims to examine the influence of information technology, information systems, and information management capability on organizational performance by taking into account pharmaceutical company PT XYZ as the unit analysis. It is hoped that the results of this research can provide input and consideration to managers of PT XYZ to improve its organizational performance for future information system development.

The grand theory adopted to support the issue examined in this study has been advanced in the literature. Tseng and Lee (as quoted from Kusuma, 2021), for example, define organizational performance is defined as the ability of an organization to achieve its stated goals through the effective and efficient use of its resources. Further Hamman et al. (2013) highlighted that organizational performance is the most basic construct of strategic management which is divided into four dimensions, namely (1) stock market performance, (2) liquidity, (3) growth, and (4) profits (Hamman et.al, 2013). Details definitions of the conceptual variables under study that advanced in the literature are as follows.

Organizational performance refers to the effectiveness of all activities in an organization for each need assigned to each group. There are at least five indicators of organizational performance, namely productivity, service quality, responsiveness, sense of responsibility and accountability (Anugrah, as quoted from Effendy et al. 2021). Furthermore, Ayinaddis (2023) in his research divided innovation which has a significant influence on company performance into four orientations, one of them is organizational innovation, which includes (1) quality management systems, (2) collaboration between functions, (3) use of intranets and databases to increase company knowledge sharing, and (4) outsourcing. The research results of Dalle et al. (2020) provide an understanding that the organizational performance of pharmaceutical companies can be influenced by the availability of data or information and the accessibility of modern technology which can provide motivation, direction, and simulations for employees.

Dewett et al. (2001) defines information technology (IT) not only as tools but also includes media that connect employees to information systems, for example, the internet, email, conference calls, fax machines, etc. Meanwhile, Erliana et al. (2023) define IT as a technology that is capable of

processing data into information and as a technology that processes the distribution of data or information. Brennan and Johnson (as quoted from Malaquias et al. 2016) said that information technology is a managerial asset which role is significant in helping to promote and communicate organizational goals and to measure and monitor these goals from a financial and social perspective. Porter and Millar in Rivard et al. (2006) assess that IT can contribute to changes in competitive forces by contributing to reducing costs or increasing differentiation.

Information System (IS) is a computing system which provide information to its users to make a data driven decision through various sources in the form of references, databases, real time data, as well as analysis data such as trend patterns and projection (Wiederhold, 1995). The value of an information system is influenced by user and technology preferences, as well as the relationship between messages, activities, and the costs of those messages. Information Systems can improve consistency, quality of decision making and learning through their integration into complex decision-making processes (Fuglseth et al. 1994), but the lack of support from top management and employee attitudes towards the important value of information has the potential to be a challenge (Hailu, 2014).

Information Management Capability (IMC) is defined as the capability to build data registration, data management, and data configuration (Huang et al., 2016). It was found that IMC play an important role in developing a company's capabilities on customer management, process management, and performance management. In turn, these capabilities influence the company's customers size, finances, human resources, and organizational effectiveness (Mithas et al., 2011). This emphasizes the need to strategically integrate information systems into business activities, apart from relying on technological solutions. Information Management Capabilities, which are related to organizational performance, have the potential to provide competitive advantages for companies (Huang et al., 2016).

Based on the above brief explanation, the framework this study is exhibited in Figure 1.

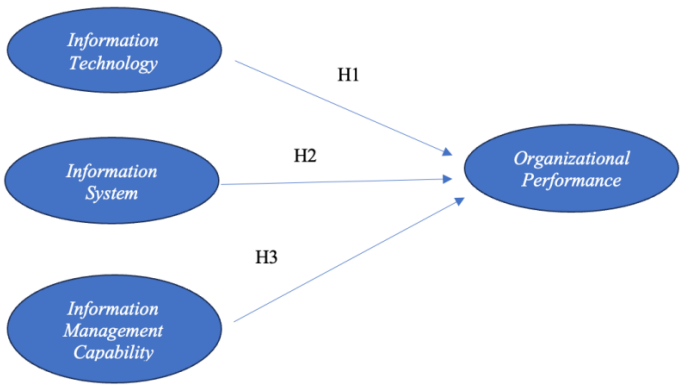

Figure 1. Research Framework

The hypothesis of this research is as follows:
H1: There is a positive influence of Information Technology on Organizational Performance
H2: There is a positive influence of Information Systems on Organizational Performance
H3: There is a positive influence of Information Management Capability on Organizational Performance

As mentioned at the outset, this study aims to examine the influence of Information Technology (IT), Information System (IS) and Information Management Capability (IMC) on Organizational

Performance (OP) of PT XYZ. The source of data was collected from 135 sample respondents. The instrument to collect the data was by using questionnaires distributed online. The method to calculate the sample was by applying the Slovin method. The population of the Area Manager of PT XYZ in nine region of Indonesia was 201 people. This population was chosen on the basis that the Area Managers uses the Online Sales system more often than other position levels in the Sales Department.

The variables in this research are Information Technology, Information System, Information Management Capability, and Organizational Performance (detailed operationalization of variables and their references can be seen in Table 1). In measuring the indicators of each variable, a Likert scale is used with a range of 1 to 5 where 1 is 'Strongly Disagree', 2 is 'Disagree', 3 is 'Neutral', 4 is 'Agree' and 5 is 'Strongly Agree'.

Table 1. Variables, Indicators and References Used

Code	Variables and Indicators
Information Technology (Navimipour et al. 2018; Ravichandran et al. 2005)	
IT1	The use of information technology (IT) can improve organizational performance
IT2	The culture of using IT plays a role in improving organizational performance
IT3	Internet speed affects online system utilization
IT4	Increasing Internet speed can encourage employees to use the online system more
IT5	Ease of application of the online system at PT. XYZ plays an important role in improving organizational performance
IT6	I received training to use the Online Sales system
Information System (Maiga et al. 2015)	
IS1	Online system in our company allows continuous monitoring of activities throughout every field forces's covered area
IS2	Data can be connected between various departments in our company (Sales Department, Product Department and Cost Control Department)
IS3	Status changes (such as inventory, database updates, etc.) will automatically appear in the online system
IS4	Employees can retrieve information (e.g. inventory, sales data, customers database) from online system to help in decision making
IS5	Our company and Distributors have information systems that facilitate the exchange of information across company boundaries (sales and inventory)
Information Management Capability (Huang et al. 2015; Devece et al. 2016)	
IMC1	Employees can access information/data in online system quickly and without difficulty
IMC2	Our online system allows all team members to work collaboratively with fellow team members and/or superiors at any time and from anywhere
IMC3	Our online system has the ability to summarize and display information/data for better analysis (for example daily sales, sales trends, inventory, target achievement, etc.)
IMC4	Our online system has the ability to convey information/data in the correct format to facilitate conclusions
IMC5	Top Management are able to identify information/data needs for us, thus our online system underwent transformation/development
Organizational Performance (Huang et al. 2015; Ravichandran et al. 2005)	
OP1	With the help of this online system, my team and I can work more effectively
OP2	With the help of this online system, my team and I are able to provide a better quality of work
OP3	With the help of this online system, my team and I can achieve work targets and make an important reports on time
OP4	With the help of this online system, my team and I gain more competitiveness in the market
OP5	With the help of this online system, my team and I can make improvement in making a our daily and weekly work plans

To analyse the data, Partial Least Square-Structural Equation Modeling (PLS-SEM) was employed. This statistical method was chosen as Ravichandran & Lertwongsatien (2005), Rivard

et al. (2006), Matzler (2013), and Navimipour et al. (2018) employed this method. The software used to run PLS-SEM was by applying the Smart PLS software. The steps in data analysis are: (1) Outer model analysis including validity and reliability tests; (2) Inner model analysis which includes a coefficient of determination, predictive relevance, goodness of fit, and effect size; and (3) Hypothesis testing through calculating the path coefficient and p-value (Hair et al. 2020).

3. RESULTS AND DISCUSSIONS

Based on gender, the respondents in this study were dominated by male workers, numbering 123 respondents or 91%, while women were only 12 respondents or around 9%. Most of the respondents are employees/workers who already work at PT. XYZ for 6 – 10 years, namely 55 respondents (41%), and for 11 – 15 years, 41 respondents (30%). Respondent characteristics based on branch office domicile are divided into several provinces in Indonesia, with detailed information as shown in Table 3. Java Island was the region with the most respondents, considering the branch office of PT. XYZ is also the most widely distributed on this island.

Table 2. Characteristics of Respondents
Source: calculated from the questionnaire

Characteristic	Number of respondents (N=134)	Percentage
Gender		
Male	123	91%
Female	12	9%
Working Period		
1 – 5 years	13	10%
6 – 10 years	55	41%
11 – 15 years	41	30%
16 – 20 years	19	14%
21 – 25 years	7	5%

Table 3. Branch office by province
Source: calculated from the questionnaire

PROVINCE	SIZE	PROVINCE	SIZE	PROVINCE	SIZE
Bali	5	West Kalimantan	3	Riau	4
Bangka Belitung	1	South Kalimantan	3	South Sulawesi	6
Banten	5	Central Kalimantan	1	Central Sulawesi	1
Bengkulu	1	East Kalimantan	4	Southeast Sulawesi	1
Yogyakarta	3	Kepulauan Riau	2	North Sulawesi	1
Jakarta	13	Lampung	4	West Sumatera	2
Jambi	3	Nanggroe Aceh Darussalam	3	South Sumatera	5
West Java	15	West Nusa Tenggara	2	North Sumatera	7
Central Java	17	East Nusa Tenggara	1		
East Java	21	Papua	1		
		TOTAL		**135**	

The validity tests applied in this study begin with analysing the outer loading, Average Variance Extracted (AVE), Cross-Loading, and Heterotrait-Monotrait ratio (HTMT). As for the reliability tests, this research employs the Composite Reliability and Cronbach's Alpha tests. The convergent validity test was carried out using outer loading (for each indicator) and AVE (for each variable). From the test results using Smart PLS 4.0, it was found that there was one indicator that did not meet the requirements, namely indicators with codes IT1 and IT4 (< 0.6), so the researcher deleted this indicator and recalculated the PLS algorithm.

Table 3. Validity and Reliability Test
Source: Authors calculation by using Smart PLS version 4.0

Variables	Indicators	Loading Factors (>0.6)	AVE (>0.5)	Cronbach's Alpha (>0.6)	Composite Reliability (>0.7)
Information Technology	IT2	0,720	0.553	0.857	0.765
	IT3	0,638			
	IT5	0,829			
	IT6	0,774			
Information System	IS1	0,772	0.581	0.816	0.834
	IS2	0,782			
	IS3	0,780			
	IS4	0,846			
	IS5	0,613			
Information Management Capability	IMC1	0,665	0.591	0.852	0.834
	IMC 2	0,745			
	IMC 3	0,818			
	IMC 4	0,824			
	IMC 5	0,780			
Organizational Performance	OP1	0,840	0.706	0.803	0.900
	OP2	0,873			
	OP3	0,785			
	OP4	0,844			
	OP5	0,858			

In a well-fitting model, Heterotrait correlations should be smaller than Monotrait correlations, meaning that the HTMT ratio should be below 1.0 (Razali et al., 2021). Accordingly, as listed in Table 4 all the HTMT values are not more than 0.95, indicating that the constructs are different, thus, discriminant validity can be claimed to have been established (Adedeji et al., 2017).

Table 4. HTMT Output
Source: Authors calculation by using Smart PLS version 4.0

Variable	Information Management Capability	Information System	Information Technology	Organizational Performance
Information Management Capability				
Information System	0,815			
Information Technology	0,757	0,764		
Organizational Performance	0,914	0,859	0,719	

From the results of all the Outer Model Analysis described above, it can be concluded that all the indicators and variables used in this research, namely Information Technology (X1), Information System (X2), Information Management Capability (X3), and Organizational Performance (Y) are valid and reliable since it meets all the requirements.

The results of testing the coefficient of determination show that the R square (R2) value in this research model is 72% (Table 5). Thus, it can be said that the 72 percent variation in Organizational Performance (Y) is predicted by the statistical model. Meanwhile, the remaining 28% is predicted by other factors not discussed in this study. The Q2 value was greater than 0 (zero), which means

that the variables and data in this study were able to predict the model well (Table 5). Also, the greater the GoF value describes the suitability of the model in describing the research sample.

Table 5. Inner Model Analysis
Source: Authors calculation by using Smart PLS version 4.0

Variable	R square	Q square	GoF
Organizational Performance	0.720	0.697	0.66

Hypothesis testing in this research was carried out by calculating the path coefficient. The research hypothesis is rejected if the t-values are smaller than 1.96 or the p-values are greater than 0.05. Meanwhile, the research hypothesis will be accepted if the t-value is greater than 1.96 and the p-value is smaller than 0.05. The results of calculating the path coefficient using SMART PLS 4.0 with bootstrapping subsample values of 5000 are shown in Table 6.

Table 6. Hypothesis Test
Source: Authors calculation by using Smart PLS version 4.0

Hypothesis	Variable	F square	t-values	p-values	Conclusion
H1	Information Technology -> Organizational Performance	0.06	2.475	0.013	Supported
H2	Information System -> Organizational Performance	0.13	3.338	0.001	Supported
H3	Information Management Capability -> Organizational Performance	0.35	6.143	0.000	Supported

The findings in this research support the idea that the use of an integrated and easily accessible information system in an organization that is supported by information technology, and equipped with good information management capability is very influential and able to improve organizational performance. This is consistent with previous research (Melville et al. 2004; Ravichandran & Lertwongsatien, 2005; Mithas et al. 2011; Devece et al. 2016; Navimipour et al. 2018; Fatahta et al. 2019). The relationship between IT and organizational performance is very diverse and complex, but IT is very valuable for the progress and improvement of organizational performance (Melville et al., 2004). The research findings of Fatahta et al. (2019) conducted at a pharmaceutical company in Jordan also support the idea that IT is an important empowerment tool to support and improve organizational performance through the successful implementation of appropriate IT in pharmaceutical companies, for example, in exchanging information and presenting data that can be utilized as a resource of organizational performance. Information technology can act as a driving force in the process of directing information recording and influence the development of unique technological competencies that enable the achievement of better business performance (Real et al., 2005).

Apart from utilizing IT's infrastructure resources, an organization must also develop the functional capabilities of the Information System (IS). Every pharmaceutical company needs effective and efficient IS to assist managerial functions. Information system can be developed over time through evaluations, and continuous improvements that may take years. The existence of IS supports employees in getting correct information, being able to share information, and being able to complete their work. Information and data collection no longer needs to be done manually, which takes a long time and carries the risk of errors or repetition of information (Hailu, 2014).

In this research, the results showed that the development of an IS, in this case online system for Sales Department, has a significant influence on organizational performance at PT. XYZ includes data integration and updating capabilities as well as system connectivity that allows collaboration

with external parties (distributor partners). These results are consistent with previous studies (Ravichandran et al. 2014; Hailu et al., 2014; Maiga et al. 2015).

As expressed by Weiderholf (1995), regarding the principle of integration of various data sources as the basis for decision-making with the help of IS, the findings of this research support the development of IS in PT. XYZ. It is hoped that PT. XYZ will include all important information, both internal and external, to help employees make decisions more easily and quickly and take strategic steps to maintain the company's competitiveness in the pharmaceutical industry.

It is generally believed that the knowledge required to form productive capabilities is already available in the company's database. However, inefficient processes can prevent information mobilization and lead to unsustainable competitive advantages for the company (Akram et al., 2018). Large amounts of data produced by IT and managed in IS must be organized, processed, and presented as meaningful information for users of information systems in an organization. In the current era of technology adoption, pharmaceutical companies are competing to adopt modern technology, but not all of them can utilize this technology efficiently. An organization's ability to extract and present information according to the needs of its users is very crucial.

Coeurderoy et al. (2014) suggest that to ensure employees can make maximum use of technology and information systems, the following three stages can be carried out, the first is communication as early as possible, the second is support from direct superiors either through training or internal communication can help increase success in adoption every change in technology and finally employees must feel competent and skilled enough to work more efficiently with new technology. Furthermore, for the last independent variable, information management capability (IMC), through the test results above, the results show that there is a significant influence of IMC on organizational performance, especially with ease of access, presentation of data that summarizes all information accurately. and in the correct format to assist decision-making, also management commitment to continue development. This IMC factor has the greatest influence as judged by the F-square assumption. These findings confirm previous research (Mithas et al. 2011; Devece et al. 2016; Akram et al. 2018).

Thus, the results of this research support the hypothesis and provide additional insight into how information technology and information systems resources coupled with good information/data management capabilities can be utilized to improve organizational performance. Implementation and use of the online system can bring PT. XYZ more responsive, adaptive, and innovative.

4. CONCLUSSIONS AND SUGGESTIONS

Information Technology has a significant influence on the organizational performance of PT. XYZ. In other words, empowering good IT infrastructure can support core competencies, and increase the ability to share information and knowledge within the company which leads to strengthening the company's competitiveness and performance. Information System on the other hand, also has a significant influence on the organizational performance of PT. XYZ. Thus, the online system can improve consistency, quality of decision-making, and continuous learning through its ability to guarantee the quality of data input and updated data management. The Information Management Capability has the most significant influence on the organizational performance of PT. XYZ. This can be interpreted as providing the ability to manage, process, and present information/data in online systems are considered to contribute to and support better analytical and decision-making hence helping work quality improvement, and achieving strategic

goals. The influence on organizational performance can be explained by information technology, information systems and information management capability by 72%, while the remaining 28% can be explained by other variables outside this research. Based on the results and conclusions explained above, there are several suggestions for the company and further research as follows.

For companies, looking at the significance of the influence of the three variables, namely information technology, information systems, and information management capability on organizational performance, it is recommended PT. XYZ to: (1)Strengthening information technology infrastructure and core competencies through investments that need to be made in terms of technology modernization, human resources, and technological capabilities to support the development of online systems in near future, (2)Seeing the success of the online system in helping the sales team, opens up opportunities for developing online systems for other support departments which can later be integrated with Sales Department's online system, thereby enabling more effective, efficient and responsive business processes, (3)Applying innovation and continuous improvement in the management of information or data for more personalized presentation according to the needs of each level of position to help speed up the sales team in deducing current problems or conditions and determining adaptive strategies to overcome them and (4) Regularly conduct training to ensure that all employees have optimal abilities and understanding of the online system so that they can really feel the benefits in their daily work.

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