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Factors that Influence Information Systems for Competitive Advantage: Human Resources, Information Technology and Organizational Support

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Abstract: Research related to factors that influence information systems for competitive advantage: human resources, information technology and organizational support is a literature review research article. The purpose of writing this article is to build a research hypothesis on the influence between variables, which is useful for further research within the scope of human resource management. This type of research is in the form of a literature review in the form of qualitative research which is sourced from previous research that has been published. Previous research sources such as Google Scholar, digital reference books, DOAJ and SINTA. The results of this literature review research are: 1) Human resources influence information systems for competitive advantage; 2) Information technology influences information systems for competitive advantage; and 3) Organizational support influences information systems for competitive advantage.

Keywords: Information Systems, Competitive Advantage, Human Resources, Information Technology, Organizational Support

INTRODUCTION

Information systems are the foundation of modern business and organizational activities in an increasingly digital environment. Information systems provide a framework for businesses to collect, process, and store data critical to making efficient choices and maximizing operational performance. In this situation, the variables that influence information systems have become the focus of attention of business executives and IT managers. The main goal of every organization is to gain a competitive advantage. This involves the ability to understand the market, react quickly to changes, and provide superior products and services to competitors. Optimizing information systems is one technique for gaining competitive advantage.

In achieving competitive advantage, several key factors that organizations must pay attention to include: 1) Human resources, where human resources are an important part of information systems management. Skilled and knowledgeable information technology

employees contribute greatly to the development, operation, and maintenance of effective information systems. Training, competency development and strategic recruitment are important stages in maximizing the role of HR in competitive advantage; 2) Information technology, where information technology continues to change, and companies must keep abreast of the latest developments by utilizing the latest technology. This includes selecting appropriate hardware and software, developing adaptive systems, and continuously improving to keep up with technological advances. Investing in well-placed information technology can provide major competitive benefits; and 3) Organizational support, where the success of information systems depends partly on administrative and organizational support as well as awareness of the usefulness of technology. Policies, culture and organizational structures that encourage innovation and the best use of information technology can help create competitive advantage.

Effectively combining these aspects in corporate strategy is the key to gaining competitive advantage in an ever-changing and competitive environment. This article will discuss in more detail how these aspects interact, impact each other, and contribute to an organization's strategic goals in the context of information systems. This essay will also discuss case study examples, best practices, and obstacles that may arise while maximizing these elements to gain a competitive advantage.

Based on the background above, the problem formulation is determined as follows: 1) Do human resources influence information systems for competitive advantage?; 2) Does information technology influence information systems for competitive advantage?; 3) Does organizational support influence information systems for competitive advantage?.

METHOD

The method for writing this article is to use a descriptive qualitative method with a literature review study. Researchers conducted a review of previous research and books that are relevant to research theory, especially in the scope of human resource management. Previous research articles were obtained from credible sources such as Google Scholar, Publish or Perish, DOAJ, SINTA and digital reference group (GARUDA) (Sjarifudin & Ali, 2023).

In descriptive qualitative research, literature review is used consistently with methodological assumptions. Where it must be used inductively so that it does not direct the questions asked by the researcher. Where this descriptive qualitative research is exploratory research (Ali, H., & Limakrisna, 2013).

FINDINGS AND DISCUSSION

Findings

Information Systems

According to Stair and Reynolds (2017), an information system is a collection of components that collaborate to collect, analyze, store and transmit information to assist decision making and control within an organization. Information systems can be used to carry out data and information service operations in a more productive, transparent, orderly, fast, easy, accurate, integrated, safe and efficient manner, especially to help accelerate and simplify policy making in improving service systems. An information system is a collection of hardware, software, data, processes, and people that collaborate to produce the information needed to support an organization's operations (Saputra & Sumantyo, 2022). An information system is a collection of information technology, policies, procedures, and people that work together to collect, process, store, and distribute information necessary for the operation and administration of an organization. (Lawu & Ali, 2022).

Information system indicators according to (Aswiputri, 2022) includes: 1) Accuracy: where the information provided must be accurate; 2) Timeliness: where the information provided must be timely and available when needed; 3) Complete: where the information system contains complete information, where the recipient can have a complete picture of a problem (Puspitasari & Putra Danaya, 2022).

Information system indicators include: 1) Response time: This metric tracks how long it takes an information system to react to a user request. Fast response times can increase user productivity and happiness; 2) Downtime: where when the information system cannot be accessed due to maintenance, outages, or other technical problems, this is referred to as downtime. Downtime reduction is an important performance measure; 3) Data accuracy: this assesses the accuracy of the data produced by the information system. Accurate data is critical to making informed judgments; 4) Operational efficiency: This relates to how well information systems streamline company operations and reduce operational costs; 5) Resource usage: This includes things like storage capacity, power consumption, and CPU utilization. Costs can be saved by utilizing resources efficiently; 6) Information security: Measures how well information systems protect data and information from security risks such as hacking or viruses; and 7) User satisfaction: Evaluating user satisfaction with the information system. Surveys or user feedback can be used to assess this (Saputra & Sumantyo, 2023).

Information systems have been widely studied by previous researchers, including: (Saputra & Sumantyo, 2023), (Lawu & Ali, 2022), (Puspitasari & Putra Danaya, 2022).

Human Resources

Human resources are a group of people who understand the company's interests and provide the best contribution to achieving organizational goals. Human resources according to Gary Dessler (2017) are employees and employee abilities in an organization that can influence their work performance and productivity and influence organizational performance based on knowledge, ability and commitment. (Panjaitan et al., 2023). Human resources are resources that include the quality of work carried out by a person (human) over a certain period of time and for certain purposes, such as producing or producing products and services. Human resources are closely related to the quality of humans themselves, which is proven by humans' ability to work or their ability to carry out all useful and valuable tasks, such as economic activities. Human Resources are also one of the strategic components of an organization or company because they enable the implementation of responsibilities. Management responsibilities such as planning, organizing, directing and supervising. Human Resources also carries out a number of operational tasks. A company or organization that has quality human resources will be able to achieve its goals more effectively and efficiently (Febrian et al., 2023).

Human resource indicators include: 1) Initiative: which refers to the capacity of an individual or team to take proactive, innovative and autonomous action to achieve goals and meet organizational demands; 2) Collaboration: refers to collaboration and constructive relationships between various roles or units within the HR department, as well as between HR and other departments within the company; 3) Quality of work: which refers to the extent to which a worker's work meets the standards and expectations of the organization; 4) Quantity of work: which refers to the quantity of work that must be completed by a person or HR team in a business; and 5) Behavior: which refers to the behavior, attitudes and interactions of workers and management in relation to various areas of work and relationships in the workplace (Sjarifudin et al., 2023).

Human resources have been widely studied by previous researchers, including: (Panjaitan et al., 2023), (Febrian et al., 2023), (Sjarifudin et al., 2023).

Information Technology

Information technology is a set of tools that allows you to handle data and carry out activities related to data processing. Information technology is described as anything based on computers and other electronic equipment that can be used as a storage medium to obtain, transfer and modify data. The use of computers, hardware, software, networks, and other infrastructure to collect, manage, store, transfer, and process information is referred to as information technology (IT). It covers a wide range of technologies used to automate, speed up and improve data and information processing in a number of contexts such as business, education, government and others. Computers, servers, mobile devices, operating systems, databases, software applications, computer networks, information security and other components are all part of information technology (Maisharoh & Ali, 2020).

The purpose of information technology is to help businesses and individuals manage information, make better decisions, increase efficiency, and facilitate communication. Information technology is the application of hardware, software, infrastructure and systems, as well as information management rules and procedures. The use of information technology (IT) in business can bring great competitive benefits, but it also creates a number of problems that must be solved for these advantages to be realized (Fani et al., 2015). There are many broad obstacles that are often encountered when using or implementing information technology to achieve competitive advantage, including: 1) The need for skilled human resources: IT implementation requires a team of IT management and software development experts. Among these difficulties are difficulties in attracting and retaining top IT expertise; 2) Cost of implementing information technology: IT projects often require large initial investments in hardware, software, infrastructure, training, and system integration. These expenses can be very expensive, especially for small and medium-sized companies; 3) Difficult system integration: Many companies have a variety of IT systems, and integrating them can be difficult. Systems that are not integrated can result in an inability to communicate data and information efficiently throughout the company (Zahran & Ali, 2020).

Information technology indicators include: 1) Information technology security: which measures the level of system and data security of an organization. This includes assessment of discovered vulnerabilities, prevention of cyber attacks, and compliance with security standards; 2) Innovation: The extent to which information technology facilitates organizational innovation, such as the creation of new products, business process improvements, or strategy updates; 3) System availability and performance: Measuring the availability and performance of information technology systems. These include system lag time, resource utilization rate, and reaction speed; and 4) System support and maintenance: Measures the level of technical assistance offered to users as well as the organization's capacity to manage IT systems appropriately (Nugraha et al., 2022).

Information technology has been widely studied by previous researchers, including: (Fani et al., 2015), (Maisharoh & Ali, 2020), (Zahran & Ali, 2020), (Nugraha et al., 2022).

Organizational Support

Organizational support is assistance provided by an organization to its members or workers so that they can achieve goals, improve performance and carry out their work efficiently. This may provide resources, information, training, or emotional support (Saleem & Amin, 2013). Organizational support can also include social support from coworkers, when healthy relationships between employees and coworkers and management are involved. Organizational support, in its most basic form, refers to an organization's efforts to provide resources, protection, and support to its employees so that they can work more successfully and meet their work goals (Ardi & Sudarma, 2015).

Indicators of organizational support include: 1) Management support: Measures management's assistance to employees in completing tasks, offering feedback, and providing guidance; 2) Work-life balance: The extent to which a business allows flexibility in working hours and encourages employees to balance work and home life; 3) Recognition and rewards: Determine whether the business recognizes and compensates individuals who deliver extraordinary achievements; 4) Health and welfare: The extent to which an organization provides health facilities or programs, health insurance, and employee welfare assistance; 5) Involvement opportunities: Determine whether the organization allows employees to participate in decision making or offer feedback to improve work procedures; and 6) Career development: Determine whether the organization offers prospects for career advancement, training, and professional development (Ridwan et al., 2020).

Organizational support has been widely studied by previous researchers, including: (Ardi & Sudarma, 2015), (Saleem & Amin, 2013), (Ridwan et al., 2020).

Relevant Research Results

Review relevant articles as a basis for determining research hypotheses by explaining the results of previous research, explaining similarities and differences with the research plan, from relevant previous research as in table 1. Below:

Table 1. Relevant Previous Research

No	Author (Year)	Results of Previous Research	Similarities with this article	Difference with this article	Hypothesis
1	(Adrian et al., 2023)	Human resources influence information systems; Business influences information systems; and Technology influences information systems	Human resources influence information systems	Business and Technology influence information systems	H1
2	(Zahran & Ali, 2020)	Human resources influence information systems; Business influences information systems; Technology influences information systems; and Methods influence information systems	Human resources influence information systems	Business, technology and methods influence information systems	H1
3	(Silaen et al., 2022)	Hardware influences the implementation of information systems; Software influences information systems; and Databases influence information systems	Information technology influences information systems	This research examines indicators from information technology only	H2
4	(Nurul et al., 2022)	Information security influences information system security; Information technology influences information system security; and network influence the security of information systems	Information technology influences information systems	Information and network security affects information systems	H2
5	(Kuntadi & Puspita, 2022)	The performance measurement system influences the performance of budget implementation in ministries/institutions; Organizational support	Organizational support influences information systems for competitive advantage	The performance measurement system and individual factors influence the performance of budget	H3

		influences the performance of budget implementation in ministries/institutions; and individual factors influence the performance of budget implementation in ministries/agencies		implementation in ministries/agencies	
6	(Suryani et al., 2017)	Performance expectations influence interest in using regional financial management information systems; Management support influences interest in using regional financial management information systems	Organizational support influences interest in using regional financial management information systems	Performance expectations influence interest in using regional financial management information systems	H3
7	(Safitri et al., 2023)	User involvement influences the performance of accounting information systems; Top management support influences the performance of the accounting information system; and formalization of system development influences the performance of accounting information systems	Top management support influences information systems for competitive advantage	User involvement and formalization of system development influence the performance of accounting information systems	H3

Discussion

Based on the problem formulation and results above, the discussion of this article is to review relevant articles, analyze the influence between variables and create conceptual thinking about the research plan:

The influence of human resources on information systems for competitive advantage

Human resources are resources that are attached to an organization related to humans or people within the organization. Human resources are the main indicators and play a major role in running an organization to achieve organizational goals and the organization's vision and mission. Human resources in each organization have different abilities, skills and competencies, therefore organizations must be able to see, determine and adjust these according to the needs of the organization. Good human resources are those who are able to carry out work in accordance with the workload, responsibilities and orders of the organization's superiors, while following the established organizational plans. However, human resources often become an obstacle for organizations in achieving competitive advantage due to the lack of competency and expertise of these human resources.

HR principles are guidelines or basic principles that regulate procedures and policies for managing human resources in a company. These principles help companies develop a healthy work culture, ensure legal and ethical compliance, and achieve HR goals more effectively. HR principles include: 1) Development and training: where organizations must provide opportunities for workers to develop their skills and talents through training and development. This can boost employee potential and support career advancement; 2) Diversity and inclusion: this concept underlines the importance of fostering a work climate that respects diversity and inclusion. Individual diversity should be valued by the organization, and all employees should feel accepted and valued; and 3) Performance management: where this concept highlights the importance of superior performance management, which includes setting goals, providing frequent feedback, and designing staff

development plans. Good performance management can help employees reach their maximum potential.

Human resource indicators include: 1) Initiative: where if the resources within the organization have a high level of initiative in carrying out work, then it can influence the information system for business excellence, it can have an impact on the emergence of innovation in information system development; 2) Collaboration: where when the resources available in the organization are able to collaborate well, an exchange of information and ideas will be created; 3) Quality of work: which contains how much work must be completed in a certain time period, the size of the workload, and the number of activities that must be handled by the HR department; and 4) Quantity of work: where the number of workers in the field of human resources can vary greatly based on the size of the organization, complexity of activities, and the level of organizational commitment to human resource management.

If the organization is able to implement HR that takes initiative, is able to work together, produces quality work and a good quantity of work, this will have an impact on the information system for competitive advantage which includes: 1) Creation of innovation: this can occur due to good or competent human resources, thus giving rise to innovation for the development of organizational information systems; 2) Information security: where good human resources play a role in maintaining the security of organizational information in the form of important organizational data and secrets; and 3) Data-based decision making: where good human resources will be relevant in using data and analytics to make decisions and business strategies.

Human resources influence information systems for competitive advantage, this is in line with research conducted by: (Ali et al., 2022), (Saputra, Masyruroh, et al., 2023), (Didin Sjarifudin & Zahara Tussoleha Rony, 2023).

The influence of information technology on information systems for competitive advantage

Information technology is something related to the use of computers, computer technology components such as hardware, software, networks and communication systems in collecting, managing and storing information efficiently. Information technology has many important roles in today's life, including the business, education, government, health, entertainment and manufacturing sectors. The influence of information technology on information systems in achieving competitive advantage is very large. Current information technology is changing the way most people do business and compete in the market. Like the current phenomenon, most MSME sellers offer their products and services through information technology with e-commerce media such as Shopee and TikTok Shop, and often even use social media applications such as Facebook, WhatsApp and Instagram. Those who still continue to carry out their business activities in a conventional way, namely by renting a shophouse or place and waiting for buyers to come, will be less competitive than those who use information technology to offer their products or services. Current information technology is considered more efficient (saving time and energy) and is more preferred by buyers, rather than coming to conventional places.

Information technology principles are the basic standards or rules used to manage, develop, and use IT efficiently in commercial and organizational environments. The principles of information technology include: 1) Process excellence: where information technology encourages efficiency and speed of delivery of information systems, thereby creating automation and continuous improvement in organizational processes; 2) Sustainable innovation: where information technology fosters innovation in products, services and business processes, thereby enabling organizations to gain competitive advantage; and 3)

Responsiveness to change: where information technology adapts to the needs and developments of the times, so that it is superior in gaining competitive advantage.

Information technology indicators help organizations know the extent to which information technology supports business goals, organizational operational efficiency, and good decision making to achieve competitive advantage. Information technology indicators include: 1) Information technology user satisfaction: where an evaluation is carried out to assess services that support business needs; 2) Application response speed: where the time required for a website or application to respond to a usage request, the faster the response, the more it indicates good performance; and 3) Competitive advantage increase ratio: which measures the application of information technology that has contributed to the organization's competitive advantage, including increasing market share, increasing operational efficiency and product innovation. If an organization is able to implement good information technology, it includes: 1) Satisfaction of information technology users; 2) Speed of response to user requests; and 3) The ratio of increasing competitive advantage will affect the information system for competitive advantage.

Information technology influences information systems for competitive advantage, this is in line with research conducted by: (Fani et al., 2015), (Caroline et al., 2021), (Maisharoh & Ali, 2022).

The influence of organizational support for information systems for competitive advantage

Organizational support is assistance provided by an organization to its members or workers so that they can achieve goals, improve performance and carry out their work efficiently. Organizational support is employees' perception of how the organization values their contributions and cares about their welfare. With the support provided by the organization, it will increase employee enthusiasm because their efforts and performance feel appreciated by the organization. Organizational support can be in the form of praise given to employees, financial support for skill development or training as well as bonuses given to employees if they perform well.

Organizational support indicates that the organization cares and is aware of the potential and resources they have, therefore it is maximized by providing full support. One form of support provided by the organization indirectly is by providing qualified information system facilities. This will improve employee performance in carrying out their work because it is supported by good work facilities. If the organization provides organizational support which includes management support, rewards and recognition, bonuses and work-life balance, it will affect the information system for competitive advantage.

Organizational support influences information systems for competitive advantage, this is in line with research conducted by: (Ambarsari et al., 2021), (Puspasari & Rahardjo, 2017), (Ramanto & Sitio, 2022).

Conceptual Framework

Based on the problem formulation, results, discussion and relevant previous research, a conceptual framework is obtained as in Figure 1, below:

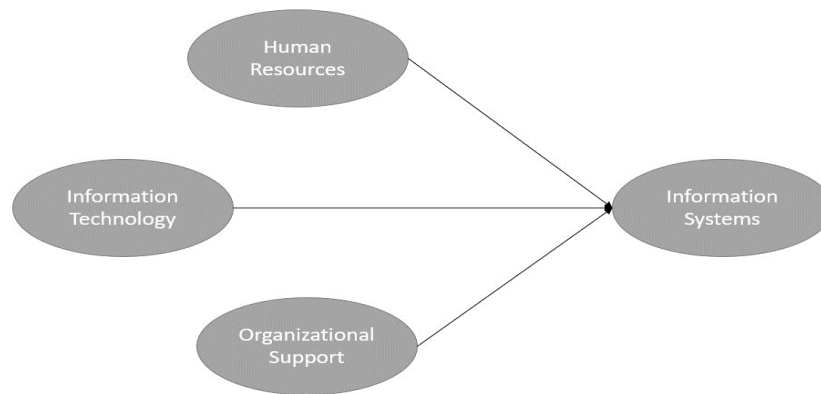


Figure 1. Conceptual Framework

Based on Figure 1 of the conceptual framework, then: Human resources, information technology and organizational support influence information systems for competitive advantage. Apart from the three variables above that influence information systems for competitive advantage, there are other variables including:

- 1) Innovation: (Saputra, Khaira, et al., 2023), (Nofrialdi et al., 2023), (Marlina, 2022).
- 2) System development: (Bolung & Tampangela, 2017), (Shobirin & Ali, 2019), (Maya Sari, 2018).
- 3) Company image: (Tjahjadi & Limakrisna, 2022), (Catur et al., 2018), (Suarjana & Suprati, 2018).

CONCLUSION

Based on the problem formulation and discussion above, it can be concluded that this article is to formulate hypotheses for further research, including: 1) Human resources influence information systems for competitive advantage; 2) Information technology influences information systems for competitive advantage; and 3) Organizational support influences information systems for competitive advantage.

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