# IT Organizational Capabilities and Resource Orchestration Model to Build Wold-Class Universities

**Yusuf Amrozi***
*Information System Departement, State Islamic University of Sunan Ampel, Indonesia*
*yusuf.amrozi@uinsby.ac.id*
**Muhammad Khusnu Milad**
*Information System Departement, State Islamic University of Sunan Ampel, Indonesia*
*m.milad@uinsby.ac.id*
**Muhammad Ali Ramdhani**
*State Islamic University of Sunan Gunung Djati, Indonesia*
**Ilham**
*Information System Departement, State Islamic University of Sunan Ampel, Indonesia*
*ilham@uinsby.ac.id*

## Abstract
Recently, global university rankings have increasingly become the attention of world university leaders. Various parameters are proposed for acceleration towards World Class University (WCU). This research aims to propose an integrative model that has never been proposed before. We propose that IT-Organizational Capabilities and Resources Orchestration can drive higher education performance toward a world-class university. We have interviewed several leaders of state Islamic universities in Indonesia, and they agree that these parameters enable Islamic universities to be globally competitive. The indicators and sub-indicators on the research model variables are explained to facilitate the testing of this model

**Keywords:** IT-Organizational Capabilities, Resources Orchestration, Islamic Higher Education, World-Class University

**Biographical notes:**

Yusuf Amrozi and Muhammad Khusnu Milad are Associate Professors of Information Systems at State Islamic University, Surabaya-Indonesia. Muhammad Ali Ramdhani is Professor of Informatics at State Islamic University, Bandung-Indonesia.

## 1. Introduction

The phenomenon of today's global university rankings is increasingly attracting the attention of higher education leaders (Mok & Kang, 2021). One of the higher education ranking mechanisms on an international scale that is currently becoming a phenomenon is the World Class University. Robert Lee Madison first coined World Class University (WCU) in

August 1889. Madison is an educator at an educational institution in Cullowhee, United States. Based on this, people have recently changed their perspective that ranking educational institutions is essential in describing tertiary institutions. Since the existence of WCU, educational institutions have increasingly expanded their curricula and external performance. Hence many universities have experienced rapid growth and large-scale change.

Recently, several efforts have been made toward becoming a World Class University. In building a university on a global scale, it is necessary to have an important strategy and a universal understanding of the actual university (Barnett, 2005). The university's foundation was established, and the vision and mission of the college itself were supported by organizational capabilities, information technology capabilities, university instructors, and interested parties towards the promotion of World Class University. Universal understanding of tertiary institutions means whether these tertiary institutions can survive regionally or nationally. These are tertiary institutions capable of responding to the needs of their society. Has the university fulfilled its teaching, research, and community service responsibilities? Therefore, several questions related to evaluating efforts towards WCU in terms of organizational capabilities and resource orchestration in tertiary institutions are essential for assessment.

Various issues regarding the global higher education rankings above are acknowledged or have not disturbed the attention of higher education managers. The question of whether tertiary institutions can be indexed in these ranking institutions or whether they can also survive or even experience a decline is a fear in itself for universities seeking to enter this ranking. One of the opinions of higher education leaders in Indonesia says that World Class University is ordinary. This ranking can be achieved in the long term if these things can be prepared and implemented in such a way. Towards a World Class University, at least three main things are needed, namely inventive leadership policies, readiness and support for human resources, and adequate infrastructure readiness (Altbach, P.G., 2004).

Phenomena and issues related to global university rankings are also attempted by several universities in various regions. A particular strategy is needed for tertiary institutions to become a World Class Universities. This strategy is an unavoidable necessity along with the internationalization program, which will make universities survive in the competition for higher education in Indonesia and globally. In terms of strategy, the extent to which higher education organizations can achieve World Class University. Institutional carrying capacity, such as the use of information technology, can still push higher education toward World Class University (Agung & Santosa, 2017). Thus this becomes a hot issue that deserves to be investigated further. The linkages in terms of organizational capabilities become opportunities for collaboration between information technology capabilities (IT Capabilities) and Organizational Capabilities, as well as the ability of unit leaders to synergize their resources (Resource Orchestration), so far no in-depth research has been conducted.

Some organizational problems in tertiary institutions include the lack of good cooperation throughout the academic community, resources or special teams in different fields, and the use of IT to support the organization's running. Utilizing IT Capabilities in organizations, according to some references, can improve their performance (Almajali et al., 2021; Homaid,

2016). Thus, the organization can gain a competitive advantage more strategically toward World Class University. Measurement of IT capabilities in organizational performance can be seen in terms of organizational culture and environment. The reason is that culture influences the college environment. This culture can be influenced by the local campus environment.

Thus, the leadership has a significant role in implementing resource orchestration so that all levels of the organization understand the management of existing resources. Leaders need to show that their organization's performance has its own characteristics so that these differences become utilized resources. Resources orchestration handles leadership actions to compile, combine, and effectively use organizational resources (Sirmon et al., 2011a). In order to achieve a competitive advantage, higher education requires prominent characteristics in the form of values that cannot be replaced or imitated. Based on the above, it is necessary to develop a contextual model that is academically capable of driving the performance of higher education organizations in terms of information technology capability, organizational capability, and resource orchestration to create a superior, competitive campus towards a World Class University. So far, there has been no research related to evaluating IT-organizational capability and Resources Orchestration on changes in university performance towards World Class University. Thus the importance of this research is realized.

## 2. Methodology

This research uses a literature study (library research). A literature study involves collecting library data, reading, taking notes, and processing writing materials (Creswell, 2015). This method collects data by searching for and reading written sources to strengthen the theoretical basis (Yin, 2014). The use of this method aims to find the best way, which in turn produces an overview of the proposed research model.

The type of data used in this research is qualitative data from recent articles published in international journals and relevant to the research theme. Data sources are obtained from articles, journals, or scientific publications with the help of Publish or Perish applications from several reliable databases.

The analysis technique used in this research is a qualitative analysis. This analysis has three activity flows, namely data reduction, data presentation, and conclusion (Miles et al., 2014). For relevant articles, data reduction is carried out by reviewing the content and exploring the main points of the relevant article. Then, research findings are disclosed in the results and discussion section, and conclusions are drawn. To ensure this model is appropriate, we asked the leaders of Islamic universities in Indonesia for their opinion through in-depth interviews. Because in terms of numbers, Islamic Universities dominate in Indonesia

# 3. Result and Discussion

## *3.1 IT Capabilities*

Advances in information technology have drastically changed the business landscape. The existence of information technology that always has innovation presents new opportunities and challenges for organizations. The increasingly strong influence of technology in various business sectors means that organizations must be able to adapt and follow existing technological trends in order to gain a competitive advantage (von Zedtwitz & Gassmann, 2002). Without the support of a robust technological infrastructure, the organization will lose efficiency and effectiveness in implementing business processes. This loss is caused by the limited capabilities possessed by human resources and the enormous potential for human error in carrying out tasks or work. Information technology improves an organization's manual processes by adopting technology to handle manual processes more efficiently. As an organization develops, the greater the data and processes must be handled so that technology implementation is needed. Without exemplary technology implementation, an organization will lose strength and opportunities to survive in a competitive environment. Understanding the importance of technological capabilities and information technology investments for organizations must also accompany this.

IT capability is an organization's ability to generate value in business processes using assets and knowledge regarding information technology (Chae et al., 2018). In other literature, IT capabilities are defined as information technology capabilities that refer to the ability of companies or organizations to mobilize IT-based resources (Bharadwaj, 2000). This capability is the ability to integrate and reconfigure internal and external payloads to cope with rapidly changing environments with multiple resources. The combination of resources is supported by the objective of generating value in business processes using assets and knowledge related to information technology. IT capabilities are the key to increasing IT investment to achieve the desired results (Rockmann et al., 2015). These capabilities are also considered heterogeneously distributed among companies and are the basis for achieving returns from IT investments.

Based on research conducted by Kim in 2011, it was stated that IT capability is composed of three main components, namely IT infrastructure flexibility, IT personal expertise, and IT management constituted (Kim et al., 2011). Infrastructure flexibility is the ability to update infrastructure according to the changes needed. IT infrastructure is the composition of all IT assets, such as software, hardware, and data. This infrastructure also includes systems and components ranging from network and telecommunications facilities to applications. IT personal expertise is defined as the professional skills and knowledge of technology, technology management, business functions, and relational areas required by IT staff to perform assigned tasks effectively (Kim et al., 2011). Overall, IT expertise is the personal capability of each party involved in the IT infrastructure within a company to improve its IT capabilities. IT management constitutes an IT function controlled centrally or distributed heterogeneously throughout the enterprise and manifested by a collection of IT processes in control planning.

### 3.2 *Organizational Capabilities*

The term Organizational Capability is the ability of an organization to deploy all its resources, both physically and conceptually, in carrying out its tasks and activities to produce maximum organizational performance (Grant, 1996), (Amit & Schoemaker, 1993) (Teece et al., 1997). In comparison, Helfat & Peteraf (2003) defines organizational capability as the ability (ability) of an organization to coordinate each task and utilize organizational resources synergistically to increase optimal results. In essence, they believe that organizational capability is the basis of an organization's ability to solve a problem effectively (Dosi et al., 2000). Organizational capabilities can be divided into two aspects, namely operational capabilities and dynamic capabilities.

#### 3.2.1 *Operational Capability*

Operational capability is crucial for organizations to carry out their daily operations efficiently and effectively (Pavlou & El Sawy, 2011). Although it does not have the same level of urgency as dynamic capability in responding to external changes, the operational capability is still important for several reasons. Operational capability focuses on optimizing processes, workflows, and resources to maximize efficiency and productivity. By streamlining operations, eliminating bottlenecks, and improving coordination, organizations can reduce costs, save time, and improve overall performance. In addition, operational capability is critical to scale operations and support business growth. This ability is done by developing systems, processes, and infrastructure that can adapt and accommodate increased demand or expansion. Organizations can seize growth opportunities without sacrificing performance by having measurable operational capabilities.

The concept of operational capability is directly related to operational strategy. According to Day (1994), the operational capability is the company's main driver in facing future competition. Operational capability is a broad functional capability consisting of activity-related capabilities, including manufacturing capabilities, materials management capabilities, and process and product engineering capabilities (Grant, 1996). The operational capability provides unity, integration, and direction to operational resources and practices. This capability includes resources, practices and other elements such as knowledge, skill sets, and leadership to deal with various problems or uncertainty. Thus, it can be said that operational capability is a set of company-specific skills, processes, and routines developed in an operations management system, which is commonly used in solving problems through the configuration of its operational resources (S. J. Wu et al., 2010).

From the results of a literature review, Swink and Hegarty (1998) stated six capability components relevant to product differentiation in the context of operations. The six components include:

1. Operational improvement
   Operational improvement is a set of different skills, processes, and routines that gradually improve and strengthen existing operating processes. The focus is on incremental process

change, creating small wins that are then transformed into performance improvements (Peng et al., 2008).

2. Operational innovation.
   Operational innovation is a different set of skills, processes, and routines for improving existing operating processes or creating and implementing significantly new and unique operating processes. Operational innovation focuses on finding variance and experimentation to change the trajectory of technology and related organizational competencies (Benner & Tushman, 2003).

3. Operational customization
   Operational customization is a collection of different skills, processes, and routines for creating knowledge through expanding and customizing processes and operating systems.

4. Operational cooperation
   Operational cooperation is a collection of skills, processes, and routines for creating healthy and stable relationships with people from various internal functional areas and external supply chain partners. In addition, operational cooperation is the ability to bring together the parties involved to share information and converge on a common interpretation of what needs to be done.

5. Operational responsiveness
   Operational responsiveness is a distinct set of skills, processes, and routines for reacting quickly and efficiently to changing input or output requirements. These capabilities are closely related to technological and production expertise in current operating systems, which lays the foundation for flexible performance (Zhang, Vonderembse, & Lim, 2003).

6. Operational reconfiguration
   Operational reconfiguration is a different set of skills, processes, and routines to achieve the transformation necessary to re-establish the fit between operations strategy and the market environment when the balance is disturbed. Operational reconfiguration is based on the concept of dynamic capability. Operational reconfiguration evolves from routine to unexpected changes, flexible responses, and synchronized operations. Panza et al. (2003a) describe operational reconfiguration as the ability to invest in physical and intangible resources that provide contingencies for a firm in an uncertain environment to change its course of action in the light of new information.

### 3.2.2 *Dynamic Capability*

Dynamic capability is urgent and vital in today's rapidly changing business environment (Liu & Fan, 2023). Dynamic capability is crucial for organizations to adapt, innovate and remain competitive in evolving market conditions and technological advances. With the increasing importance of digital technology and the digitization of various industries, dynamic capability plays a significant role in the success of digital transformation. They help organizations embrace digital innovation, integrate new technologies into their

operations, and leverage data and analytics to drive growth and efficiency. In addition, dynamic capability also provides a basis for building and maintaining a competitive advantage over time. With dynamic capability, it enables organizations to develop unique resources, capabilities, and knowledge that are difficult for competitors to imitate. This competitive advantage can be realized by improving financial performance and market position. Dynamic capability also fosters a culture of innovation and agility within an organization by helping businesses explore new ideas, experiment with different approaches, and continuously improve their products, services, and processes.

The concept of dynamic capability was first introduced and popularized by Teece et al. (1997). In this article, the dynamic capability is defined as a company's ability to integrate, build, and reconfigure internal and external competencies to cope with a rapidly changing environment (Kurtmollaiev, 2020). In addition, dynamic capability can also be said to be the ability of an organization to achieve new things and innovative forms of competitive advantage given path dependence and market position. The notion of dynamic capability can be seen from two approaches. The first approach describes dynamic capability as the company's ability, capability, capacity, or competence. In this capability-based approach, the dynamic capability is an abstract company characteristic that resides in organizational processes and management teams, relies on organizational history and culture, governs organizational activities, and enables companies to pursue differentiation and growth strategies. The second approach defines dynamic capability as organizational capability as a complex collection of organizational routines, which are last learned, highly patterned, and repetitive activities.

Dynamic capability refers to a company's orientation towards constantly reshaping, renewing, and reinventing resources and capabilities and enhancing and reconstructing key competencies in response to market changes constantly to maintain competitive advantage. The main components of dynamic capability are adaptive, absorptive, and innovative (Biedenbach & Müller, 2012; Pratama, 2019). The role of adaptive capability is to identify and exploit new market opportunities. Meanwhile, the absorptive capability allows companies to recognize the new value and external information and absorb and use it. This value includes knowledge acquisition, assimilation, transformation, and exploitation. The last component, the innovative capability, refers to developing new products and markets. It is realized through developing new products and services, new production methods, risk-taking by key executives, market innovation, and the company's innovative strategic orientation. These three components support the ability of companies to integrate, change, renew, and rebuild their competencies and resources and are common to all companies.

### 3.3 *Resources Orchestration*

Most organizations seek to invest their resources in attracting, selecting, and considering committed employees. Resources orchestration is vital for companies, especially in project management, operational management, or information technology management (Chadwick et al., 2015). The reason is that implementing the process requires good resource management to achieve the target optimally. Even though the company has quality resources

from high-level management to low-level management with professional competence in their respective fields, this does not guarantee that the organization can mobilize all its resources or the capabilities of its resources to create a sustainable competitive advantage. The variety of resources owned requires the organization to make the resources properly organized to mobilize all its capabilities and resources.

Resources orchestration aims to make the best use of resources from the actual resources being managed (Sirmon et al., 2011a). Resource management focuses on the actions taken by managers to define resources as a comprehensive process of building, structuring, and utilizing organizational resources aimed at creating value for users to achieve competitive advantage. In its development, the integration of human resources belonging to organizations requires dynamic orchestration between individuals and groups (Koentjoro & Eliyana, 2015). Organizational resources must be accumulated, utilized, and combined to improve organizational performance by managing resources effectively (Rehman et al., 2019). Improving the management of these owned resources can include several steps. Among them are structuring the organizational resource portfolio, incorporating organizational resources in building capabilities, and utilizing capabilities to create value (Rehman et al., 2019).

Resource orchestration can be achieved by combining three processes, namely consolidation, integration, and entrepreneurial orientation (Koentjoro & Eliyana, 2015). The consolidation process is one of the processes in resource orchestration which can be interpreted as a coordination process that is used as a strategy for sharing ideas of all parties involved to ensure cooperation and commitment in defining and implementing the vision of the organization openly. This coordination process is carried out to ensure that the cooperation and commitment of employees to mobilize increases the organization's strategic decision-making. In addition to the integration process, it is also necessary to integrate asset orchestration with resource management (Sirmon et al., 2011b). Asset orchestration is obtained from research on dynamic capabilities consisting of two main dimensions, namely 1) selection process that requires managers to identify and invest assets, design organizational structures and governance and create temporary business processes, 2) configuration or deployment processes that require coordination, vision and asset support to innovate (Koentjoro & Eliyana, 2015). The following process is an entrepreneurial orientation/entrepreneurial orientation. Entrepreneurial orientation is a behavioral tendency to have the courage to take risks, be innovative, and be proactive in leading organizations. By going through these three processes, unique resources will be created that have more value for the organization.

### *3.4 Higher Educational Performance*

Organizational performance is defined in various ways according to the discipline and type of organization. In the context of higher education evaluation, organizational performance can be measured objectively and subjectively to capture the performance of an organization (Creasey, 2008.). Subjective measures are based on individual agreement that the organization has achieved its goals. While objective measures will refer to measurable

data that shows the deadline has been met, such as the difference between the expected completion date and the actual completion date. Several ranking agencies provide different measures of higher education performance. We propose five indicators that we refer to from Islamic organizations that handle education and culture, namely Isesco (Islamic World Educational, Scientific and Cultural Organization), namely research performance, teaching performance, resources support, international outlook, and socioeconomic impact.

Research performance today cannot be denied as the primary indicator of higher education performance. Research conducted by Aydin (2017) states that research performance can be measured by ten criteria, namely journal quality index, peer and colleague evaluation, citation index, number of awards and awards achieved, number of papers presented at meetings, number of dissertations, invitation publications to present papers (books and articles), success in obtaining grants and positions held in professional associations (Aydin, 2017). The related literature generally emphasizes that the level of research productivity refers to research results produced by academics and is generally measured as total publications by a researcher. The most popular criterion used to measure productivity is the number of publications weighted by publication ratings (Aydin, 2017).

In terms of teaching performance, many indicators can show their performance through the quality of graduates and student achievements. The relevance of institutional capabilities, particularly information technology capabilities, can be used to provide access to online material resources for students and lecturers, such as access to e-books, journals, and teaching videos (Alavi & Gallupe, 2003). IT can also be used to create interactive learning experiences such as simulations and games. IT also supports increased collaboration between students and lecturers, such as creating an online learning community where students can exchange ideas with other students, even lecturers. Concrete examples of the role of IT in supporting learning performance include online courses, e-books, virtual learning environments, learning management systems, and many more.

In resource performance, IT capabilities can be used to manage resources effectively. This capability includes the ability to collect, store and analyze data about resources and use data to support decisions. Utilization of IT in resource management is widely used for several things, including 1) tracking resource usage, 2) identifying areas of ineffective resources, 3) making recommendations regarding ineffective resources to be used as consideration for decision-making (Amrozi et al., 2018). Using IT to support resource management can improve organizational efficiency and effectiveness. Concrete examples of IT implementation in resource management are asset management information systems, scheduling systems, and inventory management systems.

Apart from that, IT capabilities are also essential for an international outlook for higher education institutions to be involved and connected with organizations worldwide. These capabilities include communicating, collaborating, and sharing information with people from different cultures and backgrounds worldwide. The use of IT strongly supports the international outlook of higher education to expand the reach and improve the quality of tertiary institutions. An example of using IT to encourage an international outlook is using email and video conferencing such as Zoom, Google Meet, and others to conduct online

meetings. With an increase in IT investment, higher education institutions can expand their reach to improve the quality and capability of higher education institutions. This expansion will bring new opportunities to improve the quality of human resources and improve higher education towards a World Class University.

Likewise, IT capabilities have a socioeconomic impact on universities. The point is that by adopting good IT, the organization will improve its stakeholders' social and economic welfare. This is one of the capabilities of IT to increase job creation, improve education and promote regional development. Specific examples related to improving the socioeconomic welfare of the stakeholders involved are 1) the availability of online education, which allows learning to be carried out anywhere, 2) e-commerce which allows buying and selling transactions online with a broader range, 3) IT sustainability, the intention is the development of information technology that continues to innovate and help businesses and organizations become more competent and have competitive value.

### 3.5 *Propose Model To Enhance World-Class Universities*

We have explained above that the roles of IT Capabilities, Organizational Capabilities, and Resources Orchestration have contributed to driving organizational performance. Furthermore, in this section, we propose the collaboration of these three things in an integrative model that encourages the performance of tertiary institutions towards universities with international reputations. We formulate this in some relationships between variables, namely the relationship between IT Capabilities and Organizational Capabilities, which results in a new concept called IT-Organizational Capabilities, the relationship between IT-Organizational Capabilities and Higher Education Performance, and the moderating role of Resources Orchestration in IT-Organizational relations with Capabilities to Higher Education Performance.

1. Relationship of IT Capabilities to Organizational Capabilities

IT capabilities as an organization's ability to deploy and manage information technology resources and combine them with other capabilities (Hu et al., 2021; S. Wu & Gao, 2022). Meanwhile, Organizational Capabilities are Organizational capabilities, which are the capabilities of an organization in utilizing all its resources, both physically and non-physically, in carrying out its tasks and activities to produce maximum organizational performance (Amit & Schoemaker, 1993), (Grant, 1996), (Teece, 2014),(Trivellato et al., 2021). Both are interrelated in driving organizational performance. Several related studies have corroborated the critical role of IT Capabilities for Organizational Capabilities, for example, by Riera and Iijima (2019). The results of this study indicate that Information Technology Capability can drive organizational capabilities through digital business value. A set of information technology capabilities in this study, such as Risk Management, Business Planning, is essential in digital business value. In addition, the Continuous Internal Knowledge Dissemination of the innovation dimension on the Organizational Intelligence Quotient shows a positive relationship. This study reveals

that the combination of IT capabilities and Organizational Capabilities can drive in the context of digital business values , which are very important in today's business era.

2. Relationship of IT-Organizational Capabilities to Higher Education Performance

   IT-Organizational Capabilities are organizational capabilities in managing information technology resources and institutional resources of the organization they own (Amrozi, 2018). Thus it integrates a set and carrying capacity of information technology and Organizational Capabilities. On the other hand, many parameters measure higher education performance. For example, the World Islamic Organization, ISESCO, formulates key performance indicators with five parameters, namely Teaching, Research, Resources Support, International Outlook, and Socioeconomic impacts (ISESCO, 2016). In related research, the role of information technology capabilities and organizations that drive higher education performance is shown by McDowelle (2008). This McDowelle study examines the impact of IT governance, location of decision-making, priority alignment, communication, and organizational strategy. The results of this study provide evidence that IT and institutional capabilities will best drive performance in higher education institutions.

3. Moderation of Resources Orchestration (RO) on the relationship between IT-Organizational Capabilities to Higher Education Performance

   Several kinds of literature show the critical role of orchestration resources in encouraging organizational performance. Resource orchestration is the ability of organizational leaders to carry out synergistic management of the resources owned by the organization (Sirmon et al., 2011a). Resource management aims to make the best use of the managed resources. The question is, does RO have the capacity to moderate this relationship? Wales et al., 2013 conducted research examining the relationship between entrepreneurial orientation and company performance. The study results show that information and communication technology capabilities and network capabilities moderated by resource orchestration help small companies overcome 'obligations' related to the resources they use to increase optimal levels and improve organizational performance.

Based on the arguments we have built above, we propose the following model:

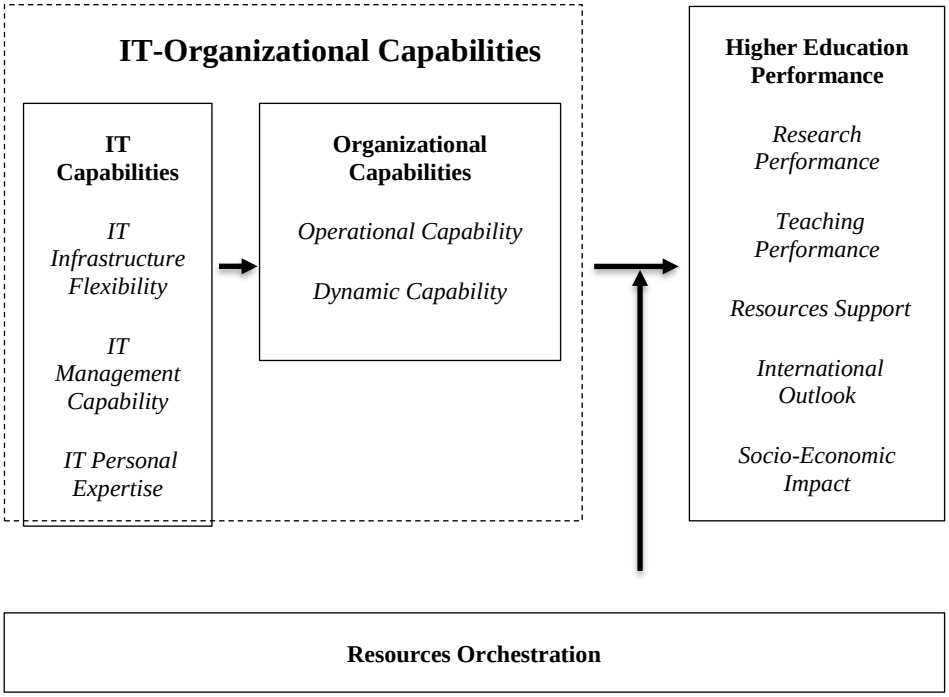


Figure 1. Model of IT-Organizational Capabilities and Resources Orchestration to Enhance Higher Education Performance

### *3.6 Research Agenda*

As we explained above, this model integrates IT Capabilities, Organizational Capabilities, and Resources Orchestration to support the performance of higher education organizations. The question is, how to ground this into a research operationalization? To parse this, we need to explain that the IT-OC variable is an exogenous variable. Meanwhile, university performance is an endogenous variable. While orchestration resources as a moderating variable, which has the potential to strengthen or weaken exogenous variables into endogenous variables.

Based on several literatures, each of the variables we call above has some indicators or sub-indicators to reduce it to be more operational. The IT Capabilities variable has indicators of IT Personal Expertise, IT Management Capability, and IT Infrastructure Flexibility. The IT Personal Expertise indicator has sub-indicators: Technology Knowledge, IT management skills, Business Function Knowledge, and Interpersonal Skills. Meanwhile, the IT Management Capability indicator has IT Planning sub-indicators, IT investment decision-making, IT Coordination, and IT Control. Meanwhile, the IT infrastructure Flexibility indicator has connectivity, compatibility, and modularity sub-indicators.

Meanwhile, the Organizational capabilities variable has Operational Capabilities and Dynamic Capabilities indicators. The operational capabilities indicator has Coordination, Operational effectiveness, and Configuration sub-indicators. Meanwhile, the dynamic capabilities indicator has to sense, seize, and transform sub-indicators. On the other hand, the orchestration resources variable as a moderating variable has indicators of asset orchestration and resource management. The asset orchestration indicator has Search/Selection and Configuration/Deployment sub-indicators. Meanwhile, resources management has Structuring, Bundling, and Leveraging sub-indicators.

Meanwhile, for the Higher Education Performance endogenous variable, we propose five indicators, namely research performance, teaching performance, resources support, international outlook, and socioeconomic impact. The research performance indicator has sub-indicators, such as the Publication citation index and International co-publications. The teaching performance indicator has Student Performance sub-indicators and Degree Quality. The resources support indicator has sub-indicators, such as Stakeholder support and Institutional income. The international outlook indicator has International Collaboration and International Student sub-indicators. The socioeconomic impact indicator has sub-indicators of Alumni welfare level and Income level of community outreach. So based on the narrative above, the following research hypothesis arguments can be arranged:

H1. IT Capabilities have a positive effect on Organizational Capabilities

H2. IT-Organizational Capabilities have a positive effect on Higher Organizational Performance

H3. Resources Orchestration positively moderates the relationship between IT-Organizational Capabilities to Higher Organizational Performance.

The research targets can include the leaders and managers of tertiary institutions at both the top management level (rector/president at universities), middle management (Dean on Faculty), and operational management (Head of Department), with an organizational analysis unit.

## 4. Conclusion

Such a competitive challenge in the higher education business requires managers to update in providing additions so that the reputation of higher education can compete globally. Accordingly, a higher education ranking institution spurred higher education managers to rank higher on this index. To encourage the best performance from tertiary institutions towards WCU, we propose an integrative model of IT Capability, Organizational Capabilities, and Resource Orchestration collaboration to improve tertiary performance. Also, based on the literature, we have described several parameters of the indicators for each variable to facilitate the operationalization of empirical research.

## References

Altbach, P.G. (2004) 'Globalisation and the university: Myths and realities in an unequal world', *Tertiary Education and Management*, 10(1), pp. 3–25. Available at: https://doi.org/10.1080/13583883.2004.9967114.

Agung, I., & Santosa, A. (2017). The Dynamic of Man Power Training toward World Class Universities. *Educational Sciences Perspective*, *31*(1), 43–54.

Alavi, M., & Gallupe, R. B. (2003). Using Information Technology in Learning: Case Studies in Business and Management Education Programs. *Academy of Management Learning & Education*, *2*(2), 139–153. https://doi.org/10.5465/amle.2003.9901667

Alegre, Joaquín, and Ricardo Chiva. (2008). "Assessing the Impact of Organizational Learning Capability on Product Innovation Performance: An Empirical Test." *Technovation* 28 (6): 315–26. https://doi.org/10.1016/j.technovation.2007.09.003.

Almajali, W., Ishak, K., Nafi, M., & Noratisah, S. (2021). *The Mediating Effect of IT Capability on the Relationship between Knowledge Management Processes and Organization Performance in Jordanian ICT Companies: A Conceptual Framework. 5. 5.*

Amit, R., & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, *14*(1), 33–46. https://doi.org/10.1002/smj.4250140105

Amrozi, Y., Ridwan, M., & Purwati, E. (2018). Information Technology Adoption in Islamic Higher Education Institutions in Indonesia. *Proceedings of the Built Environment, Science and Technology International Conference*, 326–332. https://doi.org/10.5220/0008904103260332

Amui, Lara, et.al. (2017). "Sustainability as a Dynamic Organizational Capability: A Systematic Review and a Future Agenda toward a Sustainable Transition." *Journal of Cleaner Production* 142: 308–22. https://doi.org/10.1016/j.jclepro.2016.07.103

Andersen, Torben J., and Albert H. Segars. (2001). "The Impact of IT on Decision Structure and Firm Performance: Evidence from the Textile and Apparel Industry." *Information & Management* 39 (2): 85–100. https://doi.org/10.1016/S0378-7206(01)00081-7.

Aral, Sinan, and Peter Weill. (2007). "IT Assets, Organizational Capabilities, and Firm Performance: How Resource Allocations and Organizational Differences Explain Performance Variation." *Organization Science* 18 (5): 763–80. https://doi.org/10.1287/orsc.1070.0306.

Aydiner, Arafat Salih, Ekrem Tatoglu, Erkan Bayraktar, and Selim Zaim. 2019. "Information System Capabilities and Firm Performance: Opening the Black Box through Decision-Making Performance and Business-Process Performance." *International Journal of Information Management* 47 (August): 168–82. https://doi.org/10.1016/j.ijinfomgt.2018.12.015.

Aydin, O. T. (2017). Research performance of higher education institutions: a review on the measurements and affecting factors of research performance. *Journal of Higher Education and Science*, *7*(2), 312. https://doi.org/10.5961/jhes.2017.210

Barnett, R. (2005). Recapturing the Universal in the University. *Educational Philosophy and Theory*, *37*(6), 785–797. https://doi.org/10.1111/j.1469-5812.2005.00158.x

Benner, M. J., & Tushman, M. L. (2003). Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited. *Academy of Management Review*, *28*(2), 238–256. https://doi.org/10.5465/amr.2003.9416096

Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, *24*(1), 169. https://doi.org/10.2307/3250983

Biedenbach, T., & Müller, R. (2012). Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance. *International Journal of Project Management*, *30*(5), 621–635. https://doi.org/10.1016/j.ijproman.2012.01.016

Carnahan, Seth, et al., (2023). "The Effect of Firm Compensation Structures on the Mobility and Entrepreneurship of Extreme Performers." *Atlantafed.Org*. Accessed January 27, 2023. https://www.atlantafed.org/-/media/Documents/news/conferences/2010/small-business/agarwal.pdf.

Chadwick, C., Super, J. F., & Kwon, K. (2015). Resource orchestration in practice: CEO emphasis on SHRM, commitment-based HR systems, and firm performance. *Strategic Management Journal*, *36*(3), 360–376. https://doi.org/10.1002/smj.2217

Chae, H.-C., Koh, C. E., & Park, K. O. (2018). Information technology capability and firm performance: Role of industry. *Information & Management*, *55*(5), 525–546. https://doi.org/10.1016/j.im.2017.10.001

Chen, Yang, Yi Wang, Saggi Nevo, Jose Benitez-Amado, and Gang Kou. (2015). "IT Capabilities and Product Innovation Performance: The Roles of Corporate Entrepreneurship and Competitive Intensity." *Information and Management* 52 (6): 643–57. https://doi.org/10.1016/j.im.2015.05.003.

Chen, Yang, Yi Wang, Saggi Nevo, Jiafei Jin, Luning Wang, and Wing S. Chow (2014). "IT Capability and Organizational Performance: The Roles of Business Process Agility and Environmental Factors." *European Journal of Information Systems* 23 (3): 326–42. https://doi.org/10.1057/ejis.2013.4.

Chakravarty, Anindita, Rajdeep Grewal, and V. Sambamurthy. (2013). "Information Technology Competencies, Organizational Agility, and Firm Performance: Enabling and Facilitating Roles." *Information Systems Research* 24 (4): 976–97. https://doi.org/10.1287/isre.2013.0500.

Creasey, W. (2008). *The Influences Of Information Technology Organizational Performance*

*In Higher Education. East Carolina University*.

Creswell, J. (2015). Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. New York: Pearson.

Ertl, Bernhard, Andras Csanadi, and Christian Tarnai (2020). "Getting Closer to the Digital Divide: An Analysis of Impacts on Digital Competencies Based on the German PIAAC Sample." *International Journal of Educational Development* 78 (March): 102259. https://doi.org/10.1016/j.ijedudev.2020.102259.

Gao, Peiran, Jinlong Zhang, Yeming Gong, and Haitao Li. (2020). "Effects of Technical IT Capabilities on Organizational Agility." *Industrial Management & Data Systems* 120 (5): 941–61. https://doi.org/10.1108/IMDS-08-2019-0433.

Grant, R. M. (1996). Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration. *Organization Science*, *7*(4), 375–387. http://www.jstor.org/stable/2635098

Helfat, Constance E., and Margaret A. Peteraf. (2003). "The Dynamic Resource-Based View: Capability Lifecycles." *Strategic Management Journal* 24 (10): 997–1010. https://doi.org/10.1002/smj.332.

Hindasah, Lela, and Nuryakin Nuryakin. (2020). "The Relationship between Organizational Capability, Organizational Learning and Financial Performance." *Journal of Asian Finance, Economics and Business* 7 (8): 625–33. https://doi.org/10.13106/JAFEB.2020.VOL7.NO8.625.

Homaid,. (2016). *The Mediating Effect Of It Capability On The Relationship Between Tqm And Mo With Microfinance Institutions Performance (Doctoral dissertation).*

Hu, P., Wang, Y., Feng, T., & Duan, Y. (2021). Innovative search, capability reconfiguration and firm innovation performance in the process of technological leapfrogging. *Chinese Management Studies*, *15*(5), 961–984. https://doi.org/10.1108/CMS-02-2020-0051

Kim, G., Shin, B., Kim, K., & Lee, H. (2011). IT Capabilities, Process-Oriented Dynamic Capabilities, and Firm Financial Performance. *Journal of the Association for Information Systems*, *12*(7), 487–517. https://doi.org/10.17705/1jais.00270

Koentjoro, S., & Eliyana, A. (2015). Resource Orchestration : Consolidation, Integration, Entrepreneurial and Affective Commitment in Creating Sustainable Competitive Advantage in the Family Firm Sugiarto Koentjoro Anis Eliyana Faculty of Economics & Business Management Airlangga Universit. *International of Business and Social Science*, *6*(3), 128–136.

Kurtmollaiev, S. (2020). Dynamic Capabilities and Where to Find Them. *Journal of Management Inquiry*, *29*(1), 3–16. https://doi.org/10.1177/1056492617730126

Liu, R., & Fan, B. (2023). Roles of institutions and dynamic capability in the relationship between collaboration and performance in emergency management: evidence from 110

cases in Shanghai. *Journal of Chinese Governance*, *8*(2), 206–233. https://doi.org/10.1080/23812346.2022.2131988

López-Cabarcos, M. Ángeles, Sérgio Göttling-Oliveira-Monteiro, and Paula Vázquez-Rodríguez. (2015). "Organizational Capabilities and Profitability: The Mediating Role of Business Strategy." *SAGE Open* 5 (4). https://doi.org/10.1177/2158244015616852.

Miao, Chao, Ronald H. Humphrey, and Shanshan Qian. (2017). "A Meta-Analysis of Emotional Intelligence Effects on Job Satisfaction Mediated by Job Resources, and a Test of Moderators." *Personality and Individual Differences* 116 (October): 281–88. https://doi.org/10.1016/j.paid.2017.04.031.

Miles, B. M., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis* (3rd ed.). Sage Publication.

Mok, K. H., & Kang, Y. (2021). A critical review of the history, achievements and impacts of China's quest for world-class university status. *Research Handbook on University Rankings*.

Ortega, Jose Luis, and Isidro F. Aguillo. (2009). "Mapping World-Class Universities on the Web." *Information Processing and Management* 45 (2): 272–79. https://doi.org/10.1016/j.ipm.2008.10.001.

Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the Elusive Black Box of Dynamic Capabilities. *Decision Sciences*, *42*(1), 239–273. https://doi.org/10.1111/j.1540-5915.2010.00287.x

Peng, D. X., Schroeder, R. G., & Shah, R. (2008). Linking routines to operations capabilities: A new perspective. *Journal of Operations Management*, *26*(6), 730–748. https://doi.org/10.1016/j.jom.2007.11.001

Queiroz, Magno, Rajeev Sharma, Tim Coltman, and Paul Tallon. (2015). "The Effects of IT Application Orchestration Capability on Performance." *2015 International Conference on Information Systems: Exploring the Information Frontier, ICIS 2015*, 1–12.

Rehman, S., Mohamed, R., & Ayoup, H. (2019). The mediating role of organizational capabilities between organizational performance and its determinants. *Journal of Global Entrepreneurship Research*, *9*(1). https://doi.org/10.1186/s40497-019-0155-5

Rockmann, R., Weeger, A., & Gewald, H. (2015). IT capabilities and organizational utilization of public cloud computing. *23rd European Conference on Information Systems, ECIS 2015, 2015-May*, 0–19.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011a). Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects. *Journal of Management*, *37*(5), 1390–1412. https://doi.org/10.1177/0149206310385695

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011b). Resource Orchestration to Create Competitive Advantage. *Journal of Management*, *37*(5), 1390–1412.

https://doi.org/10.1177/0149206310385695

Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies*, *45*(1), 8–37. https://doi.org/10.1057/jibs.2013.54

Trivellato, B., Martini, M., & Cavenago, D. (2021). How Do Organizational Capabilities Sustain Continuous Innovation in a Public Setting? *The American Review of Public Administration*, *51*(1), 57–71. https://doi.org/10.1177/0275074020939263

Tsarapkina, Julia M, et.al. (2021). "The Formation of Bachelors' Digital Competencies at the University." *Propósitos y Representaciones* 9 (SPE1). https://doi.org/10.20511/pyr2021.v9nspe1.811

Von Zedtwitz, M., & Gassmann, O. (2002). Market versus technology drive in R&D internationalization: four different patterns of managing research and development. *Research Policy*, *31*(4), 569–588. https://doi.org/10.1016/S0048-7333(01)00125-1

Wu, S., & Gao, H. (2022). How Internal IT Capability Affects Open Innovation Performance: From Dynamic Capability Perspective. *SAGE Open*, *12*(1), 215824402110693. https://doi.org/10.1177/21582440211069389

Wu, S. J., Melnyk, S. A., & Flynn, B. B. (2010). Operational Capabilities: The Secret Ingredient. *Decision Sciences*, *41*(4), 721–754. https://doi.org/10.1111/j.1540-5915.2010.00294.x

Yin, K. R. (2014). *Case Study Research Design and Methods (5th ed.) Thousand Oaks*. Sage Publication.

Yu, W., Ramanathan, R., & Nath, P. (2014). The impacts of marketing and operations capabilities on financial performance in the UK retail sector: A resource-based perspective. Industrial Marketing Management, 43(1), 25–31. https://doi.org/10.1016/j.indmarman.2013.07.014

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and Dynamic Capabilities : A Review, Model and Research Agenda. Journal of Management Studies, 43(4), 917–955.