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HEALTHCARE AS A SERVICE SUPPLY CHAIN: THE MEDIATING ROLE OF OPERATIONAL FLEXIBILITY ON THE RELATIONSHIP BETWEEN QUALITY OF HEALTH INFORMATION TECHNOLOGY AND MANAGEMENT CAPABILITY

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Abstract
This research has been undertaken with an inclination to study the systematic interplay between operations, information technology and management capability, while keeping healthcare as a supply chain. The aim of this research is to examine how operational flexibility influences the relationship between managerial competency and the quality of health information technology. A representative sample of 365 medical staff members (physicians, nurses, and medical technologists) from public hospitals in Lahore served as the basis for the cross-sectional study. To validate the proposed relationships, structural equation modeling was applied. The findings reveal that management skills and operational flexibility are significantly impacted by the quality of health IT, and subsequently has an impact over the service delivery in the healthcare sector. Management competence was also significantly impacted by operational flexibility, a partly mediating variable. According to the results of the study, improving the quality of health IT will boost managerial capacity and operational adaptability in healthcare institutions and enhance employee loyalty as a means of prompting sentiments associated to the workplace. Therefore, this research addresses the gap in the Pakistani healthcare supply chain literature, as there are relatively few studies that have looked at how operational flexibility affects the quality of health IT and staff management skills. The findings emphasize over the need to enhance the technology driven flexibility in service supply chains such as the healthcare sector, as it has a potential to improve both, service delivery and resource management.
Keywords*: service supply chain, health information technology, operational flexibility, management capability.*

INTRODUCTION

With the ever-growing global population, both, optimum utilization and conservation of resources has become way more critical. This has also led to the evolution of global healthcare needs, thus leading to intensified significance toward healthcare supply chains and the quality of healthcare services (Jia, et al. 2025). However, there are several obstacles that preventive healthcare (PHS) must overcome in order to offer the community with quality oriented and effective healthcare services. This cannot be accomplished unless the entire value chain is recognized and synchronized to offer best possible service delivery from the point of origin to the point of consumption.

Inadequate finance is one of the major obstacles. Compared to other developing nations, Pakistan spends a very small amount on healthcare—about 38 US dollars (USD) per capita. India, Ghana, and the Philippines spend 57, 85 and 165 USD per capita on healthcare, respectively, in comparison to Pakistan (World Bank, 2024). In terms of GDP percentage, Pakistan's expenditure on the public health sector increased by 1.2% in 2023–24 compared to 1.1 in 2019–2020, which is not a substantial rise. The shortage of medical equipment, medications, health infrastructure, and skilled healthcare workers is another issue brought on by the PHS's inadequate funding. Even while human resources increased between 2014 and 2024, this expansion is insufficient to meet the demands of a population that is expanding by 1.7% annually (GOP, 2024; Asif et al., 2023; Ali et al., 2024). About 32,879 doctors graduate from Pakistan each year, and 40% of them leave the country in search of better prospects, citing inequality, long work hours, and low pay as the primary causes. The Pakistan's healthcare system is under

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excessive strain as a result of this brain drain, which leaves people without enough access to healthcare services (Ali & Rehman, 2015; Asif et al., 2024).

There is an urgent need to offer patients' excellent medical treatment at all levels as a consequence of the development of the medical profession, procedures and offerings of the healthcare system, and the ongoing need for health services. As a result, public hospitals in Pakistan work hard to offer outpatient clinics that suit patients' demands and provide quality medical care. As a result, people's and healthcare institutions' attention has been drawn to the significance of offering high-quality medical services. The idea of quality health information management, operational flexibility, and management capability, as well as the influence of quality health information management on management capability and operational flexibility, are also important aspects of this study.

LITERATURE REVIEW

Healthcare management and the healthcare sector began implementing health information technology and flexibility ideas because, like other businesses, the healthcare sector aims to improve service results while delivering better performance. But there are a number of reasons why the healthcare sector is different from other sectors. The quality of health information technology, operational flexibility, and managerial competency are the three main factors that this study identified as being crucial to improving healthcare productivity. Today, a lot of healthcare businesses are concentrating on operational flexibility and the quality of health IT infrastructure as means of fostering sustainability and process improvement (Qaiser et al., 2021; Hydari et al., 2019).

Costly technology infrastructure, an aging population, and severe financial stresses are only a few of the frequent issues that arise from the rising demand for healthcare services and the restricted resources (capital, labor, or time) (McIntosh et al., 2014; Ali, 2015; Asif et al., 2017; Raja & Iqbal, 2019; Zafar et al., 2022). Nonetheless, in order to satisfy the demands of the modern world, the healthcare industry aims to offer high standards of service quality together with acceptable degrees of operational flexibility (Anees & Yan, 2019; Rehman & Malik, 2020). Today, a variety of strategies are employed to support the organizational goals of healthcare. The health management concept may also be successfully supported by installing cutting-edge technologies and enhancing managerial capabilities.

Quality of health information management

One of the six fundamental aspects of health systems across the globe, according to the World Health Organization, is health information systems. The others being: *service delivery, health workforce, access to essential medicines and technologies, health system financing and, leadership and governance*. The evolution of health systems worldwide is significantly influenced by health information systems (WHO, 2007, 2010). Health information systems are crucial for decision-making within each of the other five building blocks, which in turn serve as the foundation for health systems, even though each of the six building blocks is necessary (Nutley, 2012; William, 2021; Monferdini, et al. 2024). Information that feeds health information systems must come from a variety of sources, including vital registration, epidemiological surveillance, household surveys, health assessment data, and health service delivery centers.

According to Chan et al. (2010), health information systems require information from a variety of sources, including critical registration, epidemiological surveillance, household surveys, health assessment data, and health care delivery centers. However, employees in the health industry understand how crucial health information systems are to enhancing the effectiveness and productivity of their informational systems. Sometimes, a lack of awareness, knowledge, or training regarding health information technology results in a poor comprehension of valid methods to implement this system effectively. This confusion causes shortages and system failure (Meri et al., 2019; Modibbo & Inuwa, 2020; Rafique et al., 2020). A health information system is essential to the success of any e-health plan in South Africa, and over 15 million rupees have been invested in health IT projects recently. It appears that the lack of an integrated management plan, inadequate procurement from consultants, high staff turnover, need-based training, and a poor business model are the main reasons why no health IT project can be implemented (Campione et al., 2019; Ali et al., 2020). In this study, the quality of health IT will be measured along three main dimensions: interface, functions, and performance (Ribière et al., 1999; Abid et al., 2021; Asif et al., 2022).

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Interface

Human-computer interface design, contemporary technologies, and the usability of contemporary technological systems have all attracted a lot of attention recently (Tariq et al., 2022; Eldahamsheh et al., 2021; Adeel, 2019; Audi & Roussel, 2024). Nevertheless, the intended methods are frequently insufficient to accomplish the intended outcomes (Eason, 2001; Ali et al., 2020). The efficacy of computer and medical systems depends on consistency and a combination of societal and scientific acceptability. The system's features must be capable of satisfying all the demands and specifications of health sector executives and users. The following are some examples of these qualities, in addition to the practical capacity to accept and compatibility with any new system: compatibility with current systems, cost, dependability, support, etc (Nielsen 1993). In order to guarantee the appropriateness, design, acceptability, and usability of health systems, manpower is a crucial component. In order to improve the efficiency of technological systems and the quality of information, as well as to benefit from the components of electronic systems and data and prevent redundant data, a system analyst is a technical expert who can evaluate user requirements, analyze the course of work, document information sources, support the quality of work, and facilitate methods of use (Khan, 2020; Alshawabkeh et al., 2022; Russo, 2022; Mehmood et al., 2022). Furthermore, the development of user-friendly data interfaces for the health quality information system requires human resources. As a consequence, the user can import or export data to electronic sources to fill the health quality information system data warehouse, or simply browse between the system's components and interfaces information and data entry screens (Khan et al., 2020; Niland et al., 2006; Elahi et al., 2021).

Functions

Rapid change is a defining feature of healthcare systems. Additionally, the skill and functional competence to carry out fundamental executive management tasks are necessary for health information management (Kloss, 2016). All the necessary conditions are met by the information input function to enable processing of the data file (e.g., accept, select, enter, scan, read, and receive). Conversely, storage functions indicate the tasks necessary to maintain provide them with the data system in a permanent manner (read, transform, copy, create, update). The methods by which data can be processed to yield information with additional value are specified by processing functions. According to Niland et al. (2006), output functions retransmit those steps to generate reports and summaries of data from the system. Additionally, functional reflection refers to the health information system's capacity to provide users with the ability to fix and reverse errors (incorrect information) as well as enable the system to locate and fix errors quickly, easily, and accurately. a reliable and secure tracking system that detects errors, whether they originate from entry, processing, import, or storage, and raises the system's quality functioning.

Performance

Public health programs may suffer from a lack of understanding of the key performance factors that could impact the quality of health information systems, such as data collection, the effectiveness of data-based monitoring, and performance evaluation mechanisms (Al-Nawafah et al., 2022; Akbar & Hayat, 2020; Al-khawaldah et al., 2022; Davis and Burgess, 2017). Three of the most popular quality criteria used in numerous studies to evaluate the effectiveness of health IT systems are timeliness, accuracy, and completeness (Alhalalmeh et al., 2022; Alhalalmeh et al., 2020; Chen et al., 2020; Ali & Senturk, 2019).

Training is essential for conveying information and skills from the teacher to the learner, enabling them to acquire the abilities necessary to perform better and continuously carry out work-related tasks (Al-Abbadi et al., 2021; Asim et al., 2021). In this context, it is necessary that top management conduct seminars and workshops on a regular basis. Senior management and higher authorities must commission it. All managers, frontline healthcare workers, and employees of health information management systems should have access to ongoing education and training programs. Additionally, training need to concentrate on health service delivery protocols and be quantifiable (Kaposhi et al., 2015; Asif et al., 2023).

Operational Flexibility

Healthcare administrators might make decisions about technology, staffing, and whether to expand or remove services from their businesses while still fitting organizational frameworks. The duties of the healthcare manager encompass more than just overseeing the institution's internal operations, such as managing personnel and health services; they also include comprehending, adjusting, and taking advantage of opportunities presented by

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external policies and activities that invariably affect the institution and its methods of operation. As a result, the institution as a whole is impacted by the manager's actions and choices. Companies must create strategies to deal with ambiguity in a dynamic business climate. One tool that may help a business manage insecurity as much as feasible is flexibility (Al-Hawary et al., 2017). One of the fundamental forms of flexibility, operational flexibility, is now required to react swiftly and efficiently to changing circumstances, enhancing performance (Yousuf et al., 2019). Metternich et al. (2013) define flexibility as the capacity to quickly adjust to changing circumstances with little loss of time, money, effort, or performance. The capacity to adapt either proactively or reactively to ambiguities in a corporate setting is known as operational flexibility. There are several dimensions to this talent, and their relative importance may vary. Concern over the concept of flexibility and how it relates to operations management is growing. In a competitive sector that is marked by intense competition, short product life cycles, quickly shifting customer preferences, increased technological innovation, and other factors, flexibility has long been acknowledged as a critical component. According to Sawhney (2006) and Tiwari, Tiwari, & Samuel (2015), flexibility is often defined as a company's capacity to cope with or adapt to environmental unpredictability, hence offering opportunities for long-term competitive advantage.

According to Butler and Leong (2000), hospital flexibility is a fundamental and inherent component of providing healthcare, enabling healthcare organizations to effectively respond to shifting political and economic environments as well as unpredictable patient demands. Recently, Ward et al. (2015) noted that hospitals' adaptability with regard to flexible lists and physical sources may enhance their responsiveness to patients by attending to their changing healthcare needs by offering them space, staff, and physical sources (such as beds). However, the biggest obstacle for hospitals continues to be how to integrate a high degree of flexibility to adapt to changing expectations and needs (Dias and Escoval, 2014; (Dixit, Routroy and Dubey 2019). In the meanwhile, operational flexibility takes unit-based value costs and patient clinical outcomes into account. Incorporating flexibility into the medical and non-medical sectors might result in significant improvements and maintain health outcomes, particularly in periods of increased demand and uncertainty. The three aspects of flexibility—input, process, and outcome—will be examined in this study in relation to the idea of operational flexibility in the healthcare industry (Chahal, Gupta, & Lonial, 2018).

Input Flexibility

The inputs of an internal system can be used to gauge how well-established it is. The system can handle both anticipated and unforeseen changes with great efficiency when it has solid inputs. Customers may be refunded in the event of a mistake thanks to input operational flexibility, and the company can create an operating system that is both adaptable and efficient by using qualified input flexibility (Kumar & Singh 2019).

Process Flexibility

Three stages of customer value creation determine the process's flexibility: the provider domain (creating value for the customer, with an emphasis on planning, reviewing, and adjusting positive value creation); the cooperation domain (establishing a state of positive interactions between the service provider and customers as well as between customers and the organization's vision in general); and the customer domain (essentially focusing on the additional organizational distinctive value that significantly influences customer attraction). Conversely, process flexibility addresses a wide range of contributing elements that might enhance organizational services and bolster their competitive advantages (Ojha et al., 2020).

Outcome Flexibility

This adaptability result addresses competition in a professional manner. This occurs when the company concentrates on the six fundamental competencies that boost its competitiveness: service quality, service cost, service pricing, service flexibility, delivery speed, and delivery dependability. All of these diverse skills might aid the organization's executives in making wise choices by giving them a better grasp of the competitive landscape. They will provide them the ability to select from the available options and focus on different performance evaluation criteria, which will improve the interaction between businesses and their clients in order to satisfy them. Increasing an organization's internal environment results in high levels of market competitiveness since an organization's performance is restricted by how much outcome flexibility it has extended (Alamro et al., 2018; Kumar & Singh, 2019).

Management Capability

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A broad variety of abilities and knowledge are needed for management, which is a multidisciplinary field of study and a complicated process (Mohammad, 2020; Mohammad, 2019). Understanding and successfully putting into practice contemporary management concepts and strategies are essential for managers to succeed. One needs a firm grasp of the foundational ideas of management in order to become a successful manager. Gaining and preserving a competitive edge over rivals depends on a company's management's capacity to adjust to the dynamic nature of the business (Pindur et al., 1995). According to Jacobides and Winter (2012), the term "capability" is frequently used in management textbooks to refer to an idea that is taken for granted and occasionally has a wide, all-encompassing definition.

An organization's management capacity, knowledge, and procedures that are utilized to carry out initiatives and actions that result in better performance are referred to as management capability. A company's management competencies frequently include the capacity to manage inter-organizational connections efficiently. The term "managerial capability" in business describes an organization's capacity to effectively manage its assets, knowledge, and procedures in order to produce better outcomes. Assessments of management skills also commonly incorporate inter-organizational management skills (Karabag and Berggren, 2016).

THEORETICAL FRAMEWORK

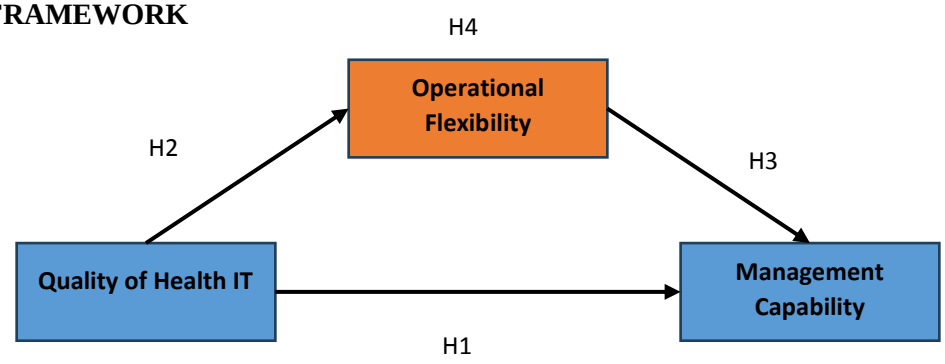

Figure 1: Proposed theoretical framework

Based on the theoretical model, which appeared in Fig. 1, the researchers have four proposed research hypotheses as follows:

H1: *Quality of health information technology has a significant impact on Management capability.*

Numerous studies have demonstrated that health information technology may help reduce medical mistakes and increase the efficiency of healthcare professionals. Conversely, high-quality health information systems contribute to better management practices and better health care results. These research concentrated on the ways that health information technology functions in the medical field, whether it affects patient happiness, as well as crucial it is to raise the standard of healthcare. Facts regarding the significance of the influence of health information technology use on health performance, follow-up, and improvement processes were presented in all of these research. The limitations and difficulties in health organizations are better understood as a result of this finding (Sittig et al., 2015; Whitehead et al., 2018; Darragh et al., 2018).

H2: *Quality of health information technology has a significant impact on Operational flexibility.*

Effective use of information technology, re-engineering of conventional procedures, increased emphasis on flexibility to react swiftly to changing demands, and performance evaluation to help senior management make better decisions are all necessary for healthcare systems (Dixit, Routroy and Dubey 2019) . Administrators and leaders of health systems must imagine realistically derived models that will be beneficial to health systems. In order to effectively address such difficulties, experts must also be able to envision a complex dynamic system that offers resilience, solutions to assess "what if" situations, and the possibilities and ideas that simulation programs bring (Krakauer et al. 1998).

It is evident from the foregoing that increasing operational flexibility is crucial to raising the quality of health information systems. However, operational flexibility requires a significant source of high-quality input data, which is what health information systems' quality offers. Since this idea has never been investigated previously,

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particularly in the health sector, it is regarded as a significant research contribution within the researcher's area of expertise.

H3: *Operational flexibility has a significant impact on Management capability.*

Zhang et al. (2003) investigated how flexibility affected output capacities and performance. According to the research, operational flexibility lowers overall expenses and operating time, which helps launch new goods and enhance existing services, both of which raise consumer happiness. Al-Khalil and Darwish (2019), on the other hand, looked at the degree of flexibility adoption in the automotive sector since their research showed that putting flexibility dimensions into practice would significantly boost operational performance. The capacity to adapt either proactively or reactively to ambiguities in the organization's internal and external environments is known as operational flexibility. Based on the aforementioned, the researchers suggested that operational flexibility is crucial and influences enhancing managerial effectiveness.

H4: *Operational flexibility mediates the relationship between Quality of health information technology and Management capability.*

According to the fourth hypothesis, operational flexibility acts as a mediator between managerial capability and the caliber of health IT, as seen in Fig. 1. According to management theories and research, operational flexibility is necessary for quality in health IT, and it has a direct effect on performance, particularly in managerial capabilities. This study is more valuable because of its operational flexibility, and one of its most significant contributions is the examination of its mediating role.

RESEARCH METHODOLOGY

Research sample

The study's participants included physicians, nurses, and medical technologists working at three public hospitals and one university hospital in Lahore city Punjab, Pakistan. At the time of the study, it was estimated that there were around 2000 medical staff leaders and physicians working at public teaching hospitals. A crucial component of research design, sample size has a big impact on the reliability and importance of the study's findings. To ensure sample size adequacy and prevent Type II errors, the sample size must be calculated. The study's purposive sample was limited to 380 physicians and medical personnel. An interviewer gave the respondents the questionnaires and directions on how to complete them. Participants were asked to rate their opinions felt about a variety of items from diverse structure. They used a seven-point Likert scale rating from -3 to +3 for information technology quality assessments, a seven-point Likert scale rating from "Completely disagree" (1) to "Completely agree" (7) for operational flexibility assessments, and a seven-point Likert scale rating from "Strongly disagree" (1) to "Strongly agree" (7) for management capability assessments. The completed questionnaires were collected and examined by the interviewer. A 73% response rate was obtained from the 500 completed questionnaires that were given to sample participants; 365 completed questionnaires were returned.

Table 1: Sample Demographics

Hospital participation

Name of the hospital	Frequency	Percent (%)
Public hospital number 1	127	34.8
Public hospital number 2	68	18.6
Public hospital number 3	49	13.4
University Hospital	121	33.2
Total	365	100.0

Professions

Professions	Frequency	Percent
Practical Nurse	83	22.7
Medical Technologist	45	12.3
Register Nurse	105	28.8
General Physician	28	7.7
Resident Doctor	78	21.4
Specialist Doctor	26	7.1
Total	365	100.0

Ten observations for each indicator variable is the commonly accepted sample size (Nunnly, 1967). The researchers deliberately chose a suitable sample size of 365 respondents for 33 observations in the study tool from Pakistan's four public hospitals in the Lahore city in order to meet the aforementioned requirements. Stratified random sampling was used to choose respondents from the observed population. As indicated in

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Table 2, 22.7% of the respondents were practical nurses, 12.3% were medical technologists, 28.8% were registered nurses, 7.7% were general practitioners, 21.4% were residents, and 7.1% were specialists. The percentages of men and women among the 365 responders were 35.1 and 64.9 percent, respectively. Their ages ranged from 20 to 80, and they were categorized into four groups, with each group having a 15-year.

Research instrument

The fourteen-item quality of health information technology component, which was derived from Ribiere et al. (1999), was used to evaluate the first part of the questionnaire. The second section, which was based on 13 items, was devoted to operating flexibility (Chahal et al., 2018). The six-item scale that was derived from (DeSarbo et al. 2005) was used to test part three managerial competency.

Table 3

Loadings, AVEs and CRs

Study Variables	Item	Loading	AVE	CR
Operational Flexibility	Ability to expand capacity through overtime and/or temporary hiring (Outcome flexibility 1).	0.775	0.697	0.96
	Ability to produce a wide range of service lines within the period used by the hospital minimum planning (Outcome flexibility 2).	0.845		
	Ability to introduce new and/or modifying existing services within.(Outcome flexibility 3)	0.905		
	Ability to shorten service times for procedures (Outcome flexibility 4).	0.823		
	Ability to produce varying levels of output at a profit within the minimum planning period used by the hospital (Outcome flexibility 5).	0.77		
	Ability of our employees to handle a range of tasks. (Process flexibility 1)	0.868		
	Ability of the technologies to handle a wide range of operations. (Process flexibility 2)	0.877		
	Ability of our processes to perform procedures on patients in varied sequences. (Process flexibility 3)	0.78		
	Suppliers' ability to respond to our request for changes in order mix. (Input flexibility 1)	0.788		
	Suppliers' ability to respond to our request for changes in volume. (Input flexibility 2)	0.819		
	Suppliers' ability to respond to our request for changes in delivery time. (Input flexibility 3)	0.842		
	Suppliers' ability to respond to our request for changes in new services. (Input flexibility 4)	0.884		
	Suppliers' ability to respond to our request for changes in service modifications.(Input flexibility 5)	0.859		
Management Capability	We have integrated logistics systems.	0.774	0.68	0.88
	We have cost control capabilities.	0.832		
	We have financial management skills.	0.917		
	We have human resource management capabilities.	0.911		
	We have accuracy of profitability and revenue forecasting.	0.797		
	We have marketing planning process.	0.696		
Quality of the Health Information Technology	Screen layout are well designed. (Interface 1)	0.825	0.69	0.97
	Screen colors are pleasant. (Interface 2)	0.835		
	Information is readable. (Interface 3)	0.871		
	Menus are easy. (Interface 4)	0.851		
	Volume of output per screen is suitable. (Interface 5)	0.856		
	Graphics are pertinent.(Interface 6)	0.852		
	Charts are concise. (Interface 7)	0.807		
	Screen interface is easy to customize. (Interface 8)	0.727		
	Simple (Functions 1)	0.847		
	Secure (Functions 2)	0.86		
	Fast (Functions 3)	0.76		
	Complete (Performance 1)	0.83		
	Sufficient (Performance 2)	0.924		
	Successful (Performance 3)	0.827		

Note: the AVE and CR were calculated based on the standardized loading of the sub dimension of the constructs in the second-order model.

Statistical Analysis

The AMOS 24 platform was utilized to conduct structural modeling research in order to compute direct and indirect effects as well as confirmatory factor analysis. Descriptive statistics were also calculated using SPSS 24.

Confirmatory factor analysis: validity and reliability

The composite reliability (CR) and average variance extracted (AVE) values for the constructs are shown in Table 3. The AVEs were higher than 0.5, and the CRs were greater than 0.7, indicating that the constructs were convergently valid (Fornell and Larcker, 1981). The operational flexibility AVE and CR were 0.697 and 0.96, the management competency AVE and CR were 0.68 and 0.88, and the health information technology quality AVE and CR were 0.69 and 0.97. Furthermore, the CFA findings did not indicate that any of the items should be eliminated because all of their standardized loadings were sufficient. The findings of the CFA for the

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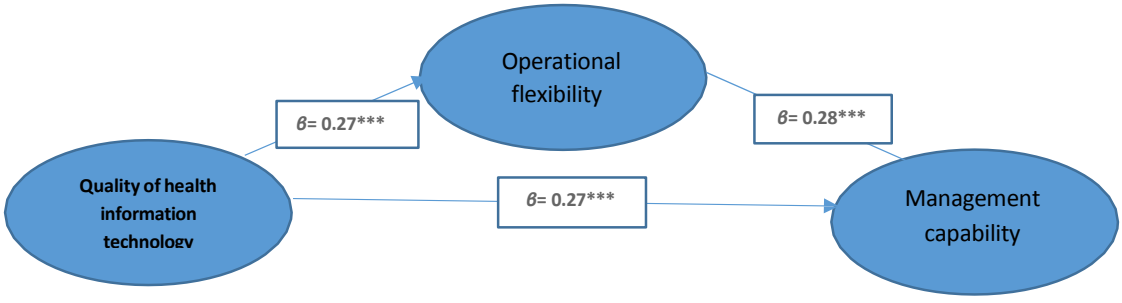
hypothesized model also indicate that our data match the model [chi square = 1205.590, (DF) = 479, (CFI) = 0.928, (TLI) = 0.921, (RMSEA) = 0.065, incremental fit index = 0.929, information criterion = 1369.590, and p-value = 0.000]. Despite the strong match indicated by the CFI and TLI values over 0.90, the RMESA was below 0.08, as anticipated by Hair et al. (2016).

RESULTS AND HYPOTHESES TESTING

SEM was constructed to incorporate operational flexibility, managerial competence, and health IT quality factors in order to assess hypotheses (see Figure 2). The SEM's fit indices (chi square = 1250, DF = 479, CFI = 0.928, TLI = 0.921, RMSEA = 0.065, and p-value = 0.000) show that the model fits well. The findings indicate that both management capability and operational flexibility are positively impacted by the quality of health IT, and that management capability is positively impacted by operational flexibility. The findings support hypotheses H1, H2, and H3. Regarding the mediating impacts of operational flexibility, the results show that operational flexibility has a large indirect impact on managerial competence due to the quality of health information technology. Our hypothesis regarding the mediating role of operational flexibility on the variables under investigation is supported by these findings. It is important to highlight that managerial capacity and the quality of health IT were somewhat mediated by operational flexibility (Hair et al., 2016).



*** significant at 0.001

Fig. 2. Structural model – Standardized effects

DISCUSSION

Technological advancement has paved way for the development in various organizational functions, in both, manufacturing and service driven organizations. Service sector in general and healthcare in particular has seen a major breakthrough in terms of cross-functional linkage, operational efficiency and improved management capability with the deployment of various health information systems (Dixit, Routroy and Dubey 2019) (Adeniyi, et al. 2024).

According to Kulikowski et al. (2012), informatics is the use of computerized information systems for decision-making, problem-solving, and question-answering. Without a doubt, the quality, safety, and efficacy of the healthcare services that are offered are fundamentally improved when health information technology is used (Martin et al., 2020). A wide range of systems are implied by health information technology, from basic charting to more sophisticated decision support and connection with medical devices. Additionally, there are many ways that health information technology can improve and transform healthcare, such as reducing the rate of human error, enhancing clinical results, encouraging regularity in care, boosting practice efficacy, and monitoring data over time (Alotaibi & Federico, 2017). Physicians can use electronic devices to handle their medicine orders with computer-based data input systems (Us et al., 2001).

Therefore, it makes sense for hospitals to focus their efforts on specific factors that influence the acceptance and resistance to electronic medical records (Darby et al., 2019). As a unique managerial approach, several companies highlight the use of advanced technology and high-tech services, such as organ transplantation or robot surgery (Trinh, 2020).

The introduction of eHealth technology, including the electronic health record (EHR), has profoundly changed the way that healthcare is delivered and how physicians carry out their responsibilities. This change will thus continue as robotics and AI become more ingrained in the healthcare system (Buch et al., 2018; Arnold &

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Wilson, 2017; Safdari et al., 2015). A developing health system uses digital infrastructure to promote patient-centered treatment, public health, and strategic planning (Sheikh, 2020; "The Evolving Evidence Base-Methodologic and Policy Challenges," 2007).

Schön et al. (2019) define usability of health information technology as the extent to which technology may be utilized effectively, efficiently, and satisfactorily based on system design. Poor HIT usability can be linked to inadequate information entry and retrieval, as well as problems in collaboration and communication (Coiera et al., 2016). However, poorly designed systems can also result in demotivation and the undesirable burnout of skilled employees (Kroth et al., 2019). The research suggests that there are several possible definitions of flexibility. According to Gupta and Buzacott (1989), flexibility in production systems usually refers to the system's capacity to adjust to changes. According to Stevenson and Spring (2007), operational flexibility is the capacity to adjust to uncertainty either proactively or reactively. There are many aspects to this talent, and the relative importance of each may change based on the circumstances. Both the ability to prolong operations (Olsson et al., 2010) and the ability to respond to uncertainty, promote efficiency, and other traits commonly linked to operational flexibility (Yousuf et al., 2019). Interconnected capacities and flexibilities make up operational flexibility. Additionally, allowing employees to switch between workstations, for example, boosts productivity and fosters operational flexibility (Azizi & Liang, 2013).

However, technology integration is necessary for every organization to function well, and any activity that relies heavily on human contact must have a suitable technological setup to increase operational flexibility without jeopardizing the security and safety of the operators. Therefore, facilitating a range of sources and technical skills is necessary for strong operational flexibility (Berglund, 2022). Hence, aside from the provision of electronic reminders, the main way that health information technology improves adherence to protocol- or guideline-based therapy is by promoting patient care. Thus, according to research from four benchmark leaders, putting in place a multifunctional system may actually help with increased care delivery that follows guidelines (especially in the area of preventive health), better monitoring and surveillance activities, lower rates of medication errors, and lower rates of utilization for potentially unnecessary or redundant care (Care, 2006).

In opposition, high-tech foundations can be used to induce operational flexibility. For example, health information technology can effectively support the established flexibility needed for fundamental health operations in hospitals and health care organizations. Decision-makers and clinical stakeholders must focus on expanding technical and operational techniques throughout health care delivering facilities since these results have a significant connection to health sector organizations. Through carefully selected partnerships that comprise their principal network of connections, organizations are always seeking methods to increase the economic value they may offer (Doz, 1996). According to conceptual interpretation, a capacity is a state of ongoing development. Accordingly, the growth of knowledge and the real adaptation of practical tasks constitute the state of managerial competency (Jarratt, 2004). A company is more likely to succeed in reaching its goals and objectives if it can continuously adjust to changes. Operational flexibility and increased management skill are both becoming more and more important components of organizational growth. Additionally, an organization's ability to adapt to regular changes in the environment and non-environment is positively impacted by flexible organizational processes. Policymakers should thus understand the significance of establishing networks, gaining information, and gaining a competitive edge. A company must first identify and then reveal its unique qualities.

CONCLUSION AND IMPLICATIONS

The evolution of health care services and the quality of service delivery is heavily reliant on health information systems. Advanced documentation and follow-up systems that emphasize medical diagnosis, monitor treatment outcomes, and minimize medical mistakes are necessary for high-quality health. The key differentiator is the quality of health information technology. The goal is to achieve a level of quality in health information systems that not only meets the primary objective of patient satisfaction but also boosts productivity, lowers costs, and creates opportunities for ongoing improvement. Having health information technology in the health system is not enough. Hospital management skills are now seen as a source of quality and progress in the healthcare industry. The ability to enter and process medical and administrative data in a simple, quick, and secure way is essential

for management capabilities to stand out. This is reflected in the hospital's decision-making level and serves as a foundation for hospital excellence.

An essential management concept for enabling firms to adapt to both internal and external changes is operational flexibility. Operational flexibility helps the firm achieve a strong condition that lowers possible losses while simultaneously boosting productivity and addressing any flaws or deficiencies. Operational flexibility is one of the research's strengths and acts as a mediating component. There aren't many studies that focus on improving the quality of health IT through flexible, participative methods, which is beneficial for the company. The study's findings demonstrated the mediation function of operational flexibility, which was a mediating factor between the management capacity of the hospitals under investigation and the quality of health information technology.

Looking at the interplay between various elements of the healthcare value chain, the study's findings also demonstrated the positive connection between operational flexibility and the managerial capacity of the hospitals it examined, as well as between operational flexibility and the quality of health IT. In order to improve the quality of health information technology and management capabilities in hospitals, hospital management should be encouraged to increase operational flexibility in all hospital policies and procedures. This can be achieved by strengthening the operational flexibility culture among employees, educating them on how to use it in their daily work, and increasing its visibility in hospital strategies. This boosts the hospital's competitive level, improves patient happiness and service for patients and their families, and strengthens the hospital's position in the market.

REFERENCES

Abid, G., Shaikh, S., Asif, M. F., Elahi, N. S., Anwar, A., & Butt, G. T. H. (2021). Influence of perceived organizational support on job satisfaction: Role of proactive personality and thriving. *International Journal of Entrepreneurship, 25*, 1–11.

Adeel, U. (2019). Analyzing the impact of government expenditure on the health sector: Evidence from Pakistan. *Journal of Business and Economic Options, 2*(2), 54-66.

Adeniyi, A. O., Arowoogun, J. O., Chidi, R., Okolo, C. A., & Babawarun, O. (2024). The impact of electronic health records on patient care and outcomes: A comprehensive review. *World Journal of Advanced Research and Reviews*, *21*(2), 1446-1455.

Akbar, R., & Hayat, A. (2020). Psychological Health of Children Engaged in Hazardous Labor: A Study in Lahore, Pakistan. *Journal of Policy Options*, *3*(2), 70-74.

Al-Abbadi, L.H., Alshawabkeh, R.O., Al-Quran, A.Z., Eldahamsheh, M.M., Almomani, H.M., Bani-Khaled, A.K., & Al- Hawary, S.I.S. (2021). Do high performance work systems enhance employee engagement? An empirical study at mobile telecommunication companies in Jordan. *International Journal of Entrepreneurship, 25*(S5), 1-14.

Alamro, A. S., Awwad, A. S., &Anouze, A. L. M. (2018). The integrated impact of new product and market flexibilities on operational performance: The case of the Jordanian manufacturing sector. *Journal of Manufacturing Technology Management, 29*(7), 1163–1187.

Alhalalmeh, M. I., Almomani, H. M., Altarifi, S., Al- Quran, A. Z., Mohammad, A. A., & Al-Hawary, S. I. (2020). The nexus between Corporate Social Responsibility and Organizational Performance in Jordan: the mediating role of Organizational Commitment and Organizational Citizenship Behavior. *Test Engineering and Management*, *83*(July), 6391 - 6410.

Alhalalmeh, M., Alkhawaldah, R. A., Mohammad, A., Al-Quran, A., Hijjawi, G., & Al-Hawary, S. (2022). The effect of selected marketing activities and promotions on the consumers buying behavior. *Business: Theory and Practice*, *23*(1), 79-87.

Al-Hawary, S. I., Batayneh, A. M., Mohammad, A. A., & Alsarahni, A. H. (2017). Supply chain flexibility aspects and their impact on customers satisfaction of pharmaceutical industry in Jordan. *International Journal of Business Performance and Supply Chain Modelling*, *9*(4), 326–343.

Ali, A. (2015). The Impact of Macroeconomic Instability on Social Progress: An Empirical Analysis of Pakistan. *Ph.D Dissertation. NCBA&E, Lahore, Pakistan.*, 1-152.

Ali, A., & Rehman, H. U. (2015). Macroeconomic instability and its impact on gross domestic product: an empirical analysis of Pakistan. *Pakistan Economic and Social Review*, 285-316.

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Vol.03 No.01 (2025)

Ali, A., & Şenturk, İ. (2019). Justifying the impact of economic deprivation, maternal status and health infrastructure on under-five child mortality in Pakistan: An empirical analysis. *Bulletin of Business and Economics (BBE), 8*(3), 140-154.

Ali, S., Asif, M. F., Khan, M. K., Fatima, N., Safdar, H., & Lassi, Z. S. (2020). Moderating role of husband's education and their employment on female labor force participation in Pakistan. *Ilkogretim Online, 19*(4), 5265–5276.

Ali, S., Ibrahim, M., Asif, M. F., Zaman, Q., & Afridi, J. R. (2024). The interactional effect of women's education and place of residence on female labor force participation in Pakistan. *Bulletin of Business and Economics, 13*(3), 492–499.

Al-Nawafah, S., Al-Shorman, H., Aityassine, F., Khrisat, F., Hunitie, M., Mohammad, A., & Al-Hawary, S. (2022). The effect of supply chain management through social media on competitiveness of the private hospitals in Jordan. *Uncertain Supply Chain Management*, *10*(3), 737-746.

Alotaibi, Y. K., & Federico, F. (2017). The impact of health information technology on patient safety. *Saudi Medical Journal*, *38*(12), 1173–1180.

Alshawabkeh, R., AL-Awamleh, H., Alkhawaldeh, M., Kanaan, R., Al-Hawary, S., Mohammad, A., & Alkhawalda, R. (2022). The mediating role of supply chain management on the relationship between big data and supply chain performance using SCOR model. *Uncertain Supply Chain Management*, *10*(3), 729-736.

Anees, M., & Yan, W. (2019). An Overview about the Challenges of Urban Expansion on Environmental Health in Pakistan. *Journal of Energy and Environmental Policy Options*, *2*(3), 64-71.

Arnold, D., & Wilson, T. (2017, June). What doctor? Why AI and robotics will define new health. In *PwC*.

Asif, M. F., Afridi, J. R., Rafique, T., Mehmood, K., & Muhammad, L. (2023). Moderated mediation mechanism of family motivation on work engagement. *Sarhad Journal of Management Sciences, 9*(1), [page numbers missing].

Asif, M. F., Ali, M., Abbas, H. G., Ishfaq, T., Ali, S., Abid, G., & Lassi, Z. S. (2024). Access and knowledge of contraceptives and unmet need for family planning in Pakistan. *BMC Women's Health*, 24(1), 651.

Asif, M. F., Ali, M., Abbas, H. G., Ishfaq, T., Ali, S., Abid, G., & Lassi, Z. S. (2024). Access and knowledge of contraceptives and unmet need for family planning in Pakistan. *BMC Women's Health, 24*(1), 651.

Asif, M. F., Ali, S., Ali, M., Abid, G., & Lassi, Z. S. (2022). The moderating role of maternal education and employment on child health in Pakistan. *Children*, *9*(10), 1559.

Asif, M. F., Ibrahim, M., Noor, M. Y., & Zaman, Q. (2024). Causal factors of unmet need for family planning in Pakistan. *Journal of Policy Research, 10*(3), 142–147.

Asif, M. F., Ishtiaq, S., Abbasi, N. I., Tahir, I., Abid, G., & Lassi, Z. S. (2023). The interaction effect of birth spacing and maternal healthcare services on child mortality in Pakistan. *Children, 10*(4), 710.

Asif, M. F., Mirza, U. K., Khan, A. H., Asif, M. Z., Riaz, S., & Ahmed, S. (2017). Job satisfaction: Antecedent and consequences. *Bulletin of Business and Economics, 6*(4), 185–194.

Asim, J., Ahmed, A., Asif, M. F., & Afridi, J. R. (2021). Sports sentiments and financial markets: Schadenfreude in rivalry of India and Pakistan. *Sarhad Journal of Management Sciences*, *7*(1).

Audi, M., & Roussel, Y. (2024). Exploring the Link Between Public Health and External Debt in Saudi Arabia. *Journal of Business and Economic Options*, *7*(4), 1-12.

Azizi, N., & Liang, M. (2013). An integrated approach to worker assignment, workforce flexibility acquisition, and task rotation. *Journal of the Operational Research Society*, *64*(2), 260–275.

Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological methods & research*, *16*(1), 78- 117.

Berglund, F. (2022). *Industry 4 . 0 enabling technologies for increasing operational flexibility in final assembly*. *13*, 38–48.

Buch, V. H., Ahmed, I., & Maruthappu, M. (2018). Debate & Analysis Artificial intelligence in medicine : *British Journal of General Practice*, *March*, 2016–2017.

Butler, T. W., & Leong, G. K. (2000). The impact of operations competitive priorities on hospital performance. *Health care management science*, *3*(3), 227-235.

Campione, J. R., Mardon, R. E., & McDonald, K. M. (2019). Patient safety culture, health information technology implementation, and medical office problems that could lead to diagnostic error. *Journal of Patient Safety*, *15*(4), 267- 273.

Chahal, H., Gupta, M., & Lonial, S. (2018). Operational flexibility in hospitals: Scale development and validation. *International Journal of Production Research, 56*(10), 3733-3755.

Chen, H., Yu, P., Hailey, D., & Cui, T. (2020). Identification of the essential components of quality in the data collection processfor public health information systems. *Health Informatics Journal*, 664–682.

Coiera, E., Ash, J., & Berg, M. (2016). The Unintended Consequences of Health Information Technology Revisited. *Yearbook of Medical Informatics*, *1*, 163–169.

Darby, A. B., Su, Y., Reynolds, R. B., & Madlock-Brown, C. (2019). A Survey-based Study of Pharmacist Acceptance and Resistance to Health Information Technology. *Perspectives in Health Information Management*, *16*(Spring).

Darragh, P. J., Bodley, T., Orchanian-Cheff, A., Shojania, K. G., Kwan, J. L., & Cram, P. (2018). A Systematic Review of Interventions to Follow-Up Test Results Pending at Discharge. *Journal of general internal medicine*, *33*(5), 750–758.

DeSarbo, W.S., Anthony Di Benedetto, C., Song, M., & Sinha, I. (2005). Revisiting the Miles and Snow strategic framework: uncovering interrelationships between strategic types, capabilities, environmental uncertainty, and firm performance. *Strategic Management Journal, 26*(1), 47-74.

Dixit, A., Routroy, S., & Dubey, S. K. (2019). A systematic literature review of healthcare supply chain and implications of future research. *International Journal of Pharmaceutical and Healthcare Marketing*, *13*(4), 405-435.

Elahi, A. R., Ahmed, A., Majid, S., & Asif, M. F. (2021). Critical factors associated with the access to bank credit: An exploratory study. *Humanities and Social Sciences Reviews, 9*(3), 135–144.

Eldahamsheh, M.M., Almomani, H.M., Bani-Khaled, A.K.,Al-Quran, A.Z., Al-Hawary, S.I.S& Mohammad, A.A (2021). Factors Affecting Digital Marketing Success in Jordan. *International Journal of Entrepreneurship*, *25*(S5), 1-12.

Gupta, D., & Buzacott, J. A. (1989). A framework for understanding flexibility of manufacturing systems. *Journal of Manufacturing Systems*, *8*(2), 89–97.

Hair, J. F., Ringle, C. M., &Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous application, better result and higher acceptance. *Long Range Planning, 46*(1-2), 1-12.

Hydari, M. A., Abid, G., Asif, M. F., Butt, T. H., & Lassi, Z. S. (2019). The effects of COVID-19 (Corona Virus Disease 2019) pandemic: An exploratory study of Pakistan. *International Journal of Disaster Recovery and Business Continuity*, *12*(1), 1431–1449.

Jacobides, M. G., &Winter, S. G. (2012). Capabilities: Structure, Agency, and Evolution. *Organization Science*, *23*(5), 1365– 1381.

Jia, F., Aboagye, S., Shahzadi, G., & Chen, L. (2025). Sustainable practices in healthcare supply chains: a review of strategies, challenges, and impacts. *International Journal of Logistics Research and Applications*, 1–25.

Karabag, S. F., & Berggren, C. (2016). International R&D collaboration in high tech: The challenges of jet fighter development partnerships in emerging economies. In *Handbook of Research on Driving Competitive Advantage through Sustainable, Lean, and Disruptive Innovation* (pp. 455-472). IGI Global.

Khan, K. K. (2020). Assessing the Impact of Climate Change on Women's Health: A Case Study in Lahore, Punjab, Pakistan. *Journal of Policy Options*, *3*(3), 82-89.

Khan, R. S., Jan, S. A., Afridi, J. R., & Asif, M. F. (2020). Impact of "Food for Education Program" on child labor incidence in tribal districts of Khyber Pakhtunkhwa, Pakistan. *Ilkogretim Online, 19*(3), 3307–3320.

Kroth, P. J., Morioka-Douglas, N., Veres, S., Babbott, S., Poplau, S., Qeadan, F., Parshall, C., Corrigan, K., & Linzer, M. (2019). Association of Electronic Health Record Design and Use Factors with Clinician Stress and Burnout. *JAMA Network Open*, *2*(8), 1–14.

Kumar, P., & Singh, A. P. (2019). Flexibility in service operations: review, synthesis and research agenda. *Benchmarking: an International Journal, 27*(7), 2108–2129.

McIntosh, B., Sheppy, B., & Cohen, I. (2014). Illusion or delusion – Lean management in the health sector. *International Journal of Health Care Quality Assurance*, *27*(6), 482–492.

Mehmood, A., Siddique, H. M. A., & Ali, A. (2022). Impact Of Health On Worker Productivity: Evidence From South Asia. *Bulletin of Business and Economics (BBE)*, *11*(2), 1-8.

Meri, A., Hasan, M., Danaee, M., Jaber, M., Safei, N., Dauwed, M., & Al-bsheish, M. (2019). Modeling the utilization of cloud health information systems in the Iraqi public healthcare sector. *Telematics and Informatics*, *36*, 132-146.

Modibbo, H., & Inuwa, N. (2020). Health Outcomes and Economic Growth Nexus: Evidence from Nigeria. *Journal of Business and Economic Options*, *3*(2), 46-55.

Mohammad, A. A. S. (2020). The effect of customer empowerment and customer engagement on marketing performance: the mediating effect of brand community membership. *Verslas: Teorija ir praktika/Business: Theory and Practice*, *21*(1), 30-38.

Mohammad, A.A.S (2019). Customers' electronic loyalty of banks working in Jordan: The effect of electronic customer relationship management. *International Journal of Scientific and Technology Research, 8*(12), *3809-3815.*

Monferdini, L., Pini, B., Bigliardi, B., & Bottani, E. (2024). Challenges and opportunities of digitalization in the healthcare supply chain: A literature review. *Procedia Computer Science*, 232, 2220-2229.

Nunnally, J. C. (1978). An overview of psychological measurement. *Clinical diagnosis of mental disorders*, 97-146.

Ojha, D., Struckell, E., Acharya, C., & Patel, P. C. (2020). Managing environmental turbulence through innovation speed and operational flexibility in B2B service organizations. *Journal of Business & Industrial Marketing*, *36*(9), 1627-1645.

Olsen, L., Aisner, D., & McGinnis, J. M. (2007). The Evolving Evidence Base—Methodologic and Policy Challenges. In *The Learning Healthcare System: Workshop Summary*. National Academies Press (US).

Olsson, S., Pal, S. N., Stergachis, A., & Couper, M. (2010). Pharmacovigilance Activities in 55 Low- and Middle-Income Countries. *Drug Safety*, *33*(8), 689–703.

Pindur, W., Rogers, E.S., & Kim, S.P. (1995). The history of management: a global perspective. *Journal of Management History*, *1*(1), 59-77.

Qaiser, N., Sattar, N., Arshi, S., Asif, M. F., & Afridi, J. R. (2021). Impact of thriving on job performance, positive health, and turnover intention: Consequences of thriving at the workplace. *International Journal of Information, Business and Management*, *13*(2), 97–107.

Rafique, T., Asif, M. F., Afridi, J. R., Rehman, N. U., & Mahmood, K. (2020). Credibility of social networking sites: Impact on organizational attraction in recruitment field. *Sarhad Journal of Management Sciences*, *6*(2), 279–294.

Raja, U., & Iqbal, N. (2019). Ensuring Worker Safety in Lahore's Large Industries: A Study on Occupational Health, Safety, and Risk Management. *Journal of Energy and Environmental Policy Options*, *2*(4), 117-124.

Rehman, A. U., & Malik, S. (2020). Environmental and Health Hazards of Pakistan's Leather Industry. *Journal of Energy and Environmental Policy Options*, *3*(3), 96-103.

Russo, L. (2022). The impact of slow productivity on healthcare costs in a no-growth: An empirical analysis. *Journal of Policy Options*, *5*(4), 22-28.

Safdari, R., Ghazisaeidi, M., & Jebraeily, M. (2015). Electronic health records: Critical success factors in implementation. *Acta Informatica Medica*, *23*(2), 102–104.

Sawhney, R. (2006). Interplay between Uncertainty and Flexibility across the Value-Chain: Towards a Transformation Model of Manufacturing Flexibility. *Journal of Operations Management*, *24*(5), 476–493.

Schön, E.-M., Sedeño, J., Mejías, M., Thomaschewski, J., & Escalona, M. J. (2019). A Metamodel for Agile Requirements Engineering. *Journal of Computer and Communications*, *07*(02), 1–22.

Sittig, D. F., Murphy, D. R., Smith, M. W., Russo, E., Wright, A., & Singh, H. (2015). Graphical display of diagnostic test results in electronic health records: a comparison of 8 systems. *Journal of the American Medical Informatics Association: JAMIA*, *22*(4), 900–904.

Stevenson, M., & Spring, M. (2007). Flexibility from a supply chain perspective: Definition and review. *International Journal of Operations and Production Management*, *27*(7), 685–713.

Tariq, E., Alshurideh, M., Akour, I., & Al-Hawary, S. (2022). The effect of digital marketing capabilities on organizational ambidexterity of the information technology sector. *International Journal of Data and Network Science*, *6*(2), 401-408.

Tiwari, A. K., Tiwari, A., & Samuel, C. (2015). Supply chain flexibility: a comprehensive review. *Management Research Review*. 38.

Trinh, H. Q. (2020). Strategic management in local hospital markets: service duplication or service differentiation. *BMC Health Services Research*, *20*(1), 1–11.

Us, C., Updates, E., & Feedback, P. (2001). Computerized provider order entry systems. *Health Devices*, *30*(9–10), 323–359.

Ward, M. J., Ferrand, Y. B., Laker, L. F., Froehle, C. M., Vogus, T. J., Dittus, R. S., ... & Pines, J. M. (2015). The nature and necessity of operational flexibility in the emergency department. *Annals of emergency medicine*, *65*(2), 156-161.

Whitehead, N. S., Williams, L., Meleth, S., Kennedy, S., Epner, P., Singh, H., ... & Graber, M. L. (2018). Interventions to improve follow- up of laboratory test results pending at discharge: a systematic review. *Journal of Hospital Medicine*, *13*(9), 631-636.

William, C. (2021). Enhancing Urban Transport Environmental Performance with Technology and Innovation. *Journal of Energy and Environmental Policy Options*, *4*(3), 28-33.

Yasir, A., Abid, G., Afridi, J. H., Elahi, N. S., & Asif, M. F. (2021). Social media communication and behavioral intention of customers in the hospitality industry: The mediating role of customer satisfaction. *International Journal of Entrepreneurship*, *25*, 1–14.

Yousuf, A., Haddad, H., Pakurár, M., Kozlovskyi, S., Mohylova, A., Shlapak, O., & János, F. (2019). The effect of operational flexibility on performance: A field study on small and medium-sized industrial companies in Jordan. *Montenegrin Journal of Economics*, *15*(1), 47–60.

Zafar, R., Abid, G., Rehmat, M., Ali, M., Hassan, Q., & Asif, M. F. (2022). So hard to say goodbye: Impact of punitive supervision on turnover intention. *Total Quality Management & Business Excellence*, *33*(5–6), 614–636.

Zhang, Q., Vonderembse, M. A., & Lim, J. S. (2003). Manufacturing flexibility: defining and analyzing relationships among competence, capability, and customer satisfaction. *Journal of Operations Management*, *21*(2), 173-191.