Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about
Online ISSN 3007-2387
Print ISSN 3007-2379



# Analysis Of Factors Affecting Efficiency, Productivity, And Decision Making Among Operation Theater Staff

**Asim Farooq**
Lecturer, Department of Emerging Allied Health Technology, Faculty of Allied Health Sciences, Superior University, Lahore.Corresponding Author Email: asimfarooq800@gmail.com
**Maryam Qayyum**
Student of BS Operation Theatre Technology, Department of Emerging Allied Health Technology, FAHS, Superior University Lahore.
**Amber Hanif**
Student of BS Operation Theatre Technology, Department of Emerging Allied Health Technology, FAHS, Superior University Lahore.
**Muhammad Yaqoob**
Student of BS Operation Theatre Technology, Department of Emerging Allied Health Technology, FAHS, Superior University Lahore.
**Rashid Husain**
Student of BS Operation Theatre Technology, Department of Emerging Allied Health Technology, FAHS, Superior University Lahore.
**Muhammad Saleh**
Student of BS Operation Theatre Technology, Department of Emerging Allied Health Technology, FAHS, Superior University Lahore.
**Imad Ud Din Khan**
Lecturer/ Program Leader BS-OTT, Department of Emerging Allied Health Technology, Faculty of Allied Health Sciences, Superior University, Lahore

**Author Details**

**Keywords:** WHO, OT, BOS, HCW, SOP, FSS

Received on 15 June 2025
Accepted on 12 July 2025
Published on 14 July 2025

Corresponding E-mail & Author*:
Asim Farooq
asimfarooq800@gmail.com

**Abstract**

Analysis of elements that impact efficiency, productivity and decision making among OR team's performance. These factors among staff members will facilitate and improve their working abilities during surgical procedures and emergency situations. These factors include teamwork, communication, job satisfaction, environment, stress, and burnout, among others, and ultimately impact surgical success, including patient outcomes. These elements have mostly been examined in connection with the productivity and efficiency of operating rooms in earlier research. Nevertheless, no study has looked at all of these aspects collectively in connection to OT staff productivity, efficiency, and decision-making. To determine how OT staff performance can be improved through productivity, efficiency, and decision-making, a number of elements will be examined jointly in this study. Objective: The purpose of this study is to determine and examine the various elements that influence the productivity, efficiency, and

decision-making of operating room personnel, particularly in secondary hospitals. Methodology: A cross-sectional survey design was used in this study to examine the variables influencing operation theater (OT) staff productivity, efficiency, and decision-making. To gather responses from occupational therapy professionals employed by different hospitals, a structured questionnaire was created and disseminated using Google Forms. The study targeted operation theatre staff, including surgeons, anesthesiologists, scrub nurses, and OT technicians from multiple hospitals. A non-probability convenience sampling method was used to recruit participants based on their availability and willingness to participate. The sample size was determined using Cochran's formula adjusted for a finite population , with confidence level of 95%, a margin of error 5% , and assumed population proportion of 50% , the required sample size for a total population of 220 was calculated to be 141 participants. Random sampling techniques was used and took 4 months of duration. Results: According to this study, staff members' productivity, efficiency, and capacity to make decisions can all be impacted by operation delays brought on by equipment problems, stress, exhaustion, and a lack of staff. To increase the effectiveness, productivity, and decision-making of OT personnel, better training, task management, and team communication are required. Conclusions: This study looked at the variables influencing OT staff members' productivity, efficiency, and decision-making, emphasizing the role of time management, teamwork, and work experience. The results highlighted the necessity of organized training programs by showing that the majority of respondents were OT techs with less than a year of experience. Two significant issues were the influence of weariness on production and the frequent delays caused by equipment.

## INTRODUCTION

The study concludes that in order to maintain effectiveness, the operating room is an essential area where everything must be done precisely. Patients' urgent or non-urgent surgical requirements are handled in a sterile, secure environment in a section of the medical department that is fully furnished with anesthesia and surgical instruments.[1]

A study claims that operating rooms are complex areas that resemble the engine room of a hospital. To operate a theater efficiently, theater employees (such as nurses, anesthetists, and surgeons) and a number of additional personnel, such as porters, technicians, IT managers, supply chain workers, and pharmacists, must communicate and collaborate closely.[2]

A surgical team's specific responsibilities and objectives, composition, structures, working circumstances, human and technological resources, and competences are all considered input elements,[3] According to a survey, efficiency and productivity are commonly used interchangeably. There are various ways to describe efficiency and productivity, depending on the industry. The Agency for Clinical Innovation Surgical Service Taskforce defines productivity as the quantity of outputs produced per unit of input. It is calculated by taking the average output for each period and dividing it by the total cost of resources (equipment, capital, and labor) used in that period. The productivity of a single operating room, a theater complex, a surgical subgroup, or many hospitals can all be assessed. On the other hand, efficiency can be classified as either output-oriented or input-oriented. Input-oriented efficiency takes into account if the same output can be produced with the same inputs, whereas output-oriented efficiency looks at whether an output can be created with the same inputs.[4] Making judgments is a crucial ability for every healthcare professional, the study found. It has long been thought that the majority of surgeons are capable of making wise decisions. Some

opinion pieces that speculate on the decision-making process of surgeons also assume that they are capable of making consistent choices.[5]

Literature gap. According to a study, experts most commonly use situational awareness-based decision-making, which is effective in high-pressure scenarios requiring prompt judgment. Experts may identify situations they have already seen and draw conclusions based on their experience rather than having to look closely at what is happening. Final decisions can be made in a unique or creative manner. This is usually used as a last resort due to the uncertain nature of the results.[6]

The reviewed literature highlights the effects of different factors and their significance among operation theater staff such as teamwork , job satisfaction , stress and burnout, noise. These studies mostly conducted at international level in developmental hospitals and some studies analyzed the factors in overall hospital but not specifically in operation theater and among operation theater staff. So their findings are unable to assess the effects of multiple factors at the same time and in single research on efficiency, productivity and decision making among operation theater staff collectively. Therefor , in this study researchers will analyze the different and multiple factors among operation theater staff that's effects their efficiency, productivity and decision making . This study will be conducted in regional and non developmental hospitals where staff performances need to better. In this study , researchers also assess more factors that have not been previously analyzed. Such as, conflicts among team, SOPs , availability of equipment and technology .

**Significance:** There are numerous inefficiencies in operating rooms that negatively affect the organization's finances, aggravate OR personnel, and result in dissatisfied patients. The OT team's productivity and efficiency are limited by a number of issues, including infrastructure, scheduling fluctuations, patient problem variability, operation types, and unforeseen events that

emerge in any surgical practice. To achieve efficiency, organizations today need workers that are both productive and knowledgeable.

The exchange of information and knowledge in an environment that promotes the creation, preservation, and optimal use of knowledge is one of the major elements impacting the performance of both the business and its personnel. One of the goals of any organization is to achieve productivity. Research has shown a positive correlation between hospital culture and power retention, which may lead to higher production. Especially in the healthcare industry, productivity has a direct impact on an organization's long-term survival and profitability. Safety and discipline are the two most important components of an effective company. All organizational management and excellence models and standards take discipline into consideration because it is so important.[7]

**Conclusion:** Despite the fact that a great deal of research has been done on the factors that influence the efficiency, productivity, and decision-making of operating room staff, these factors have not been examined in hospitals located in particular regions, and in certain instances, they have only been examined among general healthcare staff rather than OT staff specifically. Furthermore, secondary healthcare facilities and regional hospitals have not given much attention to these problems. According to various studies (nurse burnout, first page pdf, job satisfaction), factors like stress and burnout, job satisfaction and teamwork, time management, staff ability, and noise have been the main focus. However, other more important factors that affect the overall management of OT staff have not been fully examined.

These studies have not examined surgical team productivity, efficiency, or decision-making by examining several criteria.

With a primary focus on operating rooms, this study aims to examine the various elements that influence the productivity, efficiency, and decision-making of OT staff in regional and secondary healthcare facilities.

Researchers will concentrate on additional aspects in this study that haven't been examined in earlier research.

## METHODOLOGY

Cross-sectional study design was used in this study.

**Settings:** The data was collected online using Google Forms and in the operating rooms of tertiary care institutions in Lahore.

**Study Time:** Our trial lasted for four months.

The required sample size for a total population of 220 was calculated to be 141 individuals using Cochran's method adjusted for a finite population, with a 95% confidence level, a 5% margin of error, and an assumed population proportion of 50%.

**Sampling Method:** Random sampling methods were used.

Operation theater personnel with at least a year's experience, such as surgeons, anestheologists, nurses, and technicians, are eligible to apply.

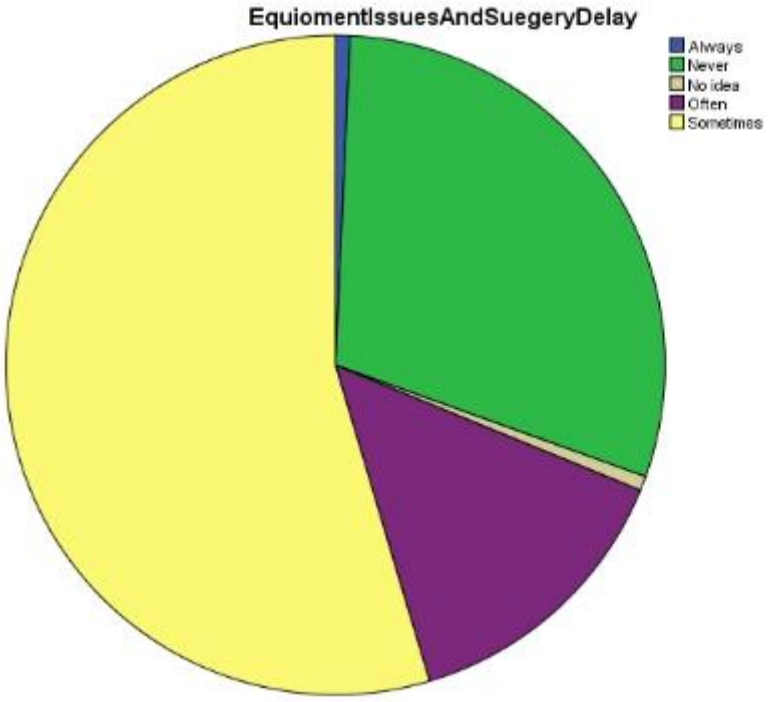
Non-clinical positions, temporary employees such as interns, and employees with less than a year of experience are all excluded.

## RESULTS

This table presented the frequency of surgery delays caused by equipment issues as reported by the operation theatre (OT) staff. The majority of respondents indicated that delays occurred sometimes (54.6%), while 29.8% reported that delays never happened. A smaller proportion stated that delays occurred often (14.2%), while very few reported "always" (0.7%) or had "no idea" (0.7%). The cumulative percentage showed that by the time "sometimes" was included, all responses were accounted for (100.0%).

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Always | 1 | .7 | .7 |
| Never | 42 | 29.8 | 30.5 |
| No idea | 1 | .7 | 31.2 |

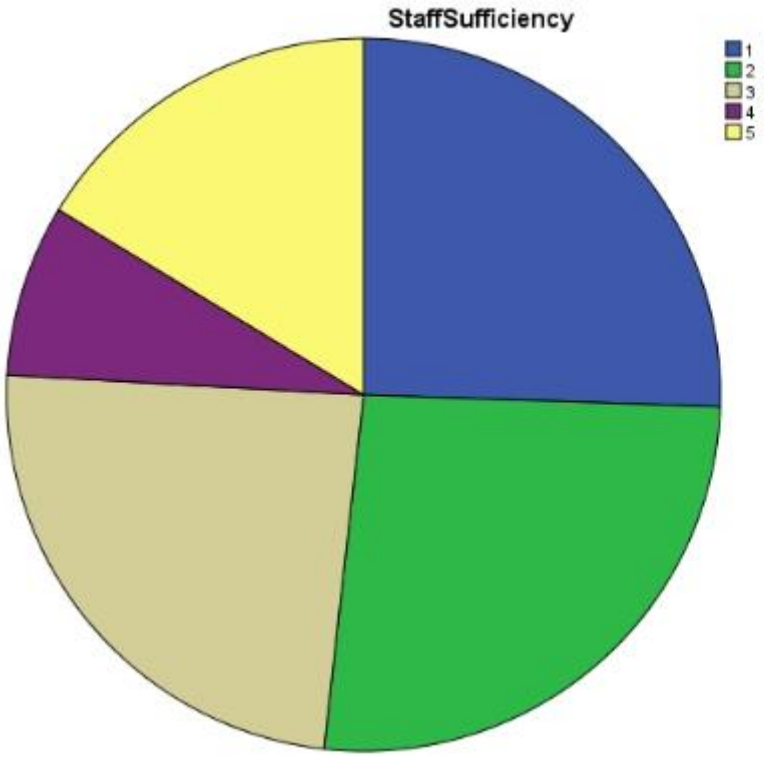
| | | | |
|---|---|---|---|
| Often | 20 | 14.2 | 45.4 |
| Sometimes | 77 | 54.6 | 100.0 |
| Total | 141 | 100.0 | |




This table presented the self-assessed work efficiency ratings of the operation theatre (OT) staff on a scale from 1 to 5. The most common ratings were 2 (26.2%) and 1 (25.5%), indicating that a significant proportion of respondents perceived their efficiency as low. A moderate rating of 3 was given by 24.1% of respondents. Higher efficiency ratings of 4 (7.8%) and 5 (16.3%) were reported less frequently. The cumulative percentage showed that by the time rating 3 was included, 75.9% of responses had been accounted for.

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| 1 | 36 | 25.5 | 25.5 |
| 2 | 37 | 26.2 | 51.8 |
| 3 | 34 | 24.1 | 75.9 |
| 4 | 11 | 7.8 | 83.7 |

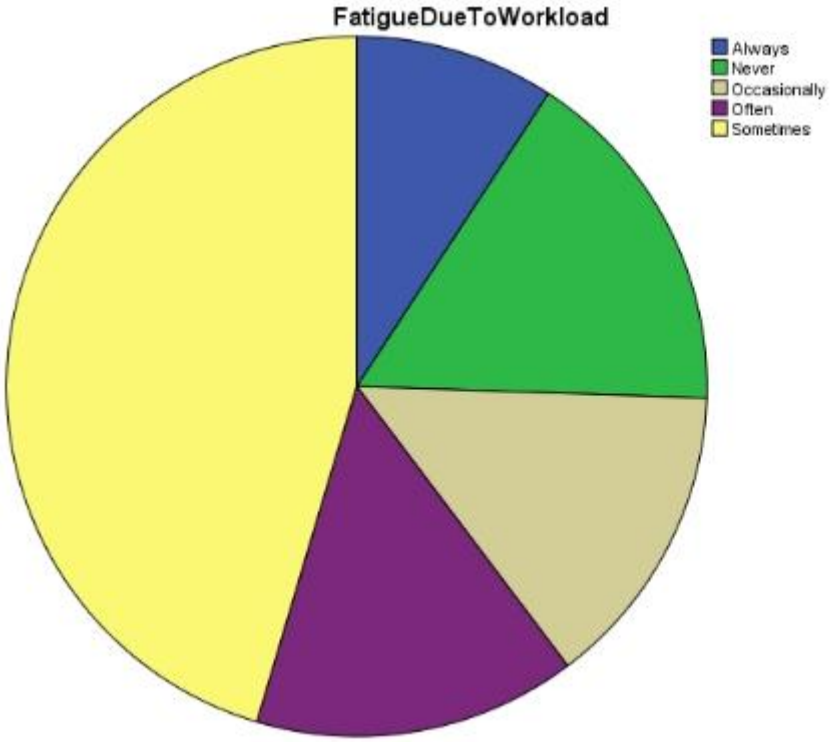
| | | | |
|---|---|---|---|
| 5 | 23 | 16.3 | 100.0 |
| Total | 141 | 100.0 | |




This table presented the frequency with which fatigue impacted work performance among the operation theatre (OT) staff. The majority of respondents reported that fatigue affected their performance sometimes (45.4%), followed by those who experienced it often (14.9%) and occasionally (14.2%). A smaller proportion stated that fatigue never affected their performance (16.3%), while 9.2% reported that it always had an impact. The cumulative percentage showed that by the time "sometimes" was included, all responses were accounted for (100.0%).

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Always | 13 | 9.2 | 9.2 |
| Never | 23 | 16.3 | 25.5 |
| Occasionally | 20 | 14.2 | 39.7 |

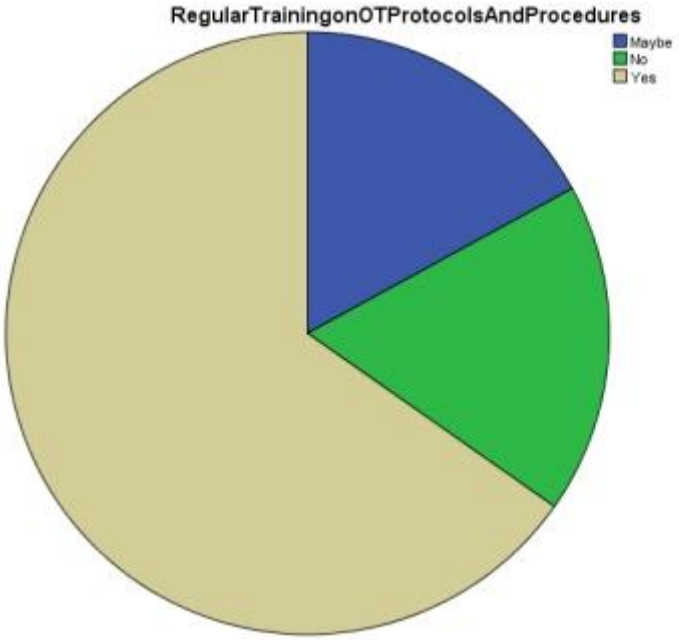
| | | | |
|---|---|---|---|
| Often | 21 | 14.9 | 54.6 |
| Sometimes | 64 | 45.4 | 100.0 |
| Total | 141 | 100.0 | |




This table presented the responses of OT staff regarding whether they felt adequately trained for decision-making. The majority of respondents (65.2%) believed they had received sufficient training (Yes), while **17.7% disagreed (No). A smaller proportion (17.0%) were uncertain and responded with "Maybe". The cumulative percentage showed that by the time "Yes" was included, all responses were accounted for (100.0%).

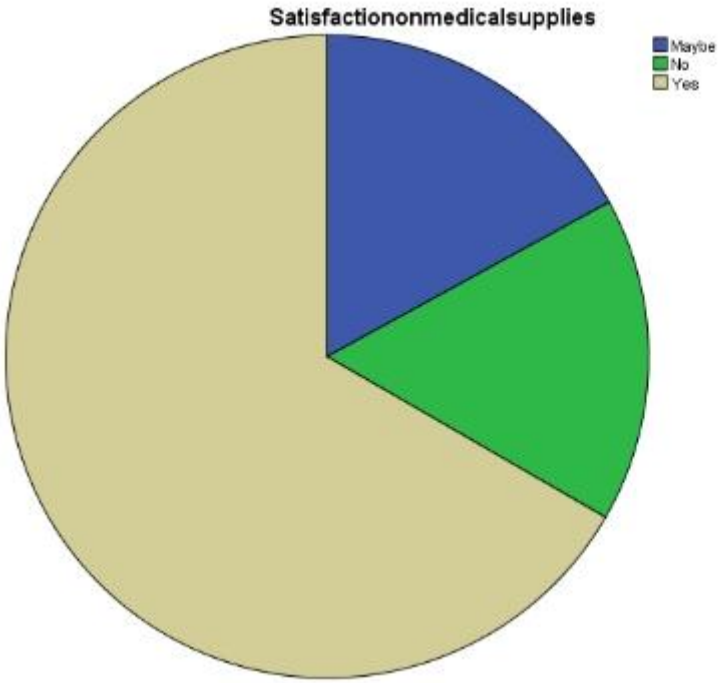
| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Maybe | 24 | 17.0 | 17.0 |
| No | 25 | 17.7 | 34.8 |
| Yes | 92 | 65.2 | 100.0 |

| | | |
|---|---|---|
| Total | 141 | 100.0 |



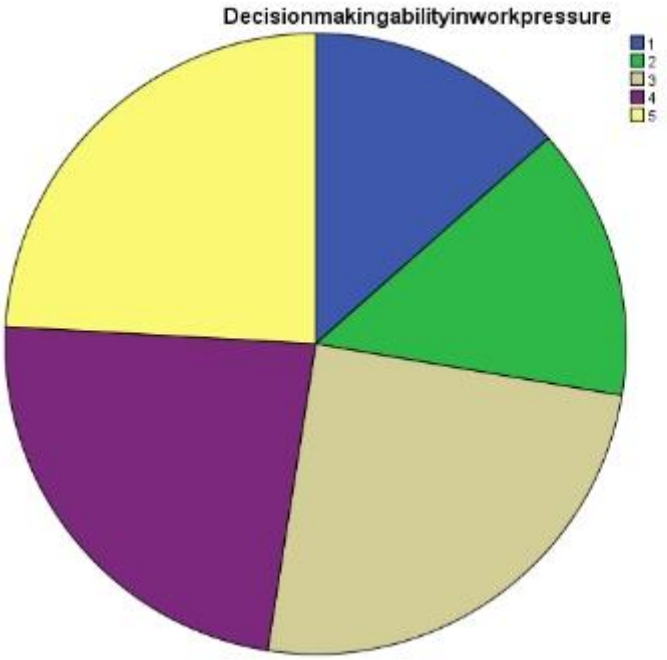

This table presented the responses of OT staff regarding their confidence in their decision-making ability. The majority of respondents (66.7%) felt confident in their ability to make decisions (Yes), while 16.3% lacked confidence (No). A smaller proportion (17.0%) were uncertain and responded with "Maybe". The cumulative percentage showed that by the time "Yes" was included, all responses were accounted for (100.0%).

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Maybe | 24 | 17.0 | 17.0 |
| No | 23 | 16.3 | 33.3 |
| Yes | 94 | 66.7 | 100.0 |
| Total | 141 | 100.0 | |



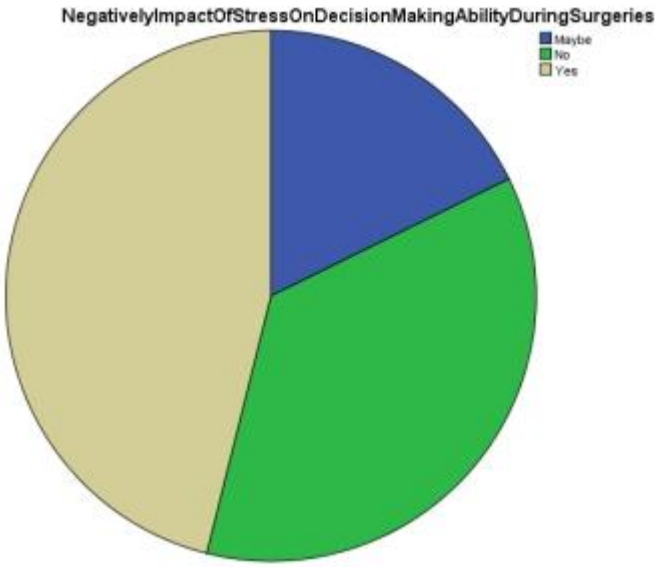

This table presented the ratings of the workplace decision-making environment among OT staff on a scale from 1 to 5. The most common ratings were 3 (24.8%), 5 (24.1%), and 4 (23.4%), indicating that a majority of respondents perceived the decision-making environment as moderate to favorable. Lower ratings of 2 (14.2%) and 1 (13.5%) were reported by a smaller proportion of respondents. The cumulative percentage showed that by the time rating 3 was included, 52.5% of responses had been accounted for.

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| 1 | 19 | 13.5 | 13.5 |
| 2 | 20 | 14.2 | 27.7 |
| 3 | 35 | 24.8 | 52.5 |
| 4 | 33 | 23.4 | 75.9 |
| 5 | 34 | 24.1 | 100.0 |
| Total | 141 | 100.0 | |



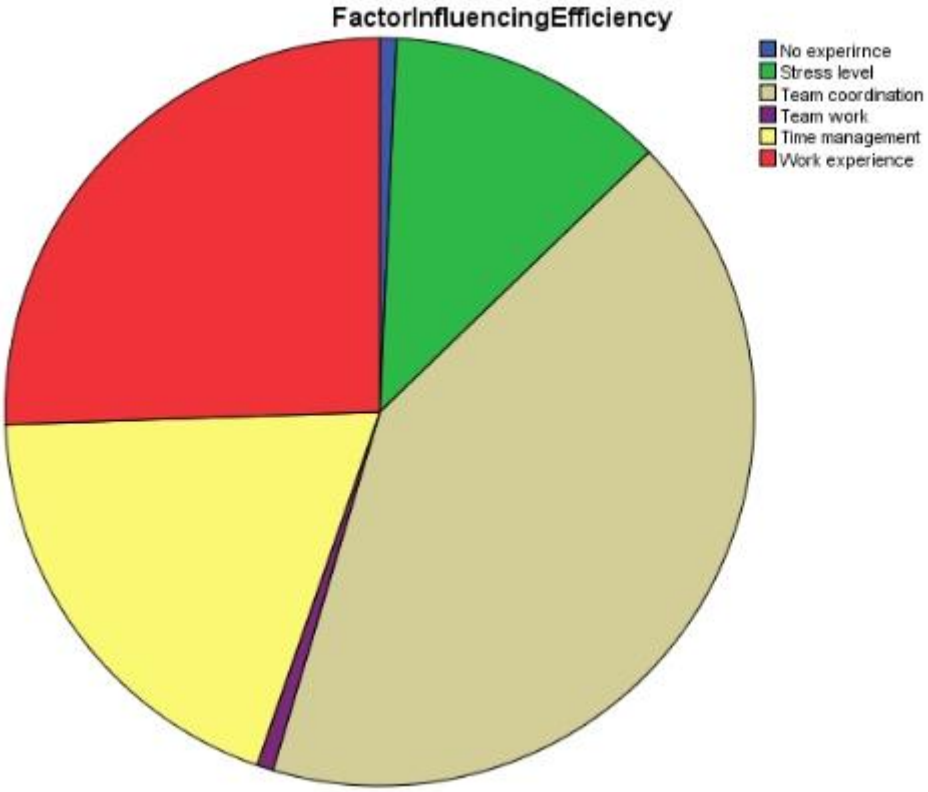

This table presented the responses of OT staff regarding whether their workplace provided a stress-free environment for decision-making. Nearly half of the respondents (46.1%) believed their workplace was stress-free (Yes), while 36.2% disagreed (No), indicating that a significant portion found their work environment stressful. A smaller proportion (17.7%) were uncertain and responded with "Maybe". The cumulative percentage showed that by the time "Yes" was included, all responses were accounted for (100.0%).

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Maybe | 25 | 17.7 | 17.7 |
| No | 51 | 36.2 | 53.9 |
| Yes | 65 | 46.1 | 100.0 |
| Total | 141 | 100.0 | |




This table presented the factors that influenced decision-making among OT staff. The most commonly reported factor was team coordination (41.8%), followed by work experience (25.5%) and time management (19.1%). Stress levels (12.1%) also played a role, while teamwork (0.7%) and no experience (0.7%) were mentioned by very few respondents. The cumulative percentage showed that by the time "work experience" was included, all responses were accounted for (100.0%).

| | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| No experience | 1 | .7 | .7 |
| Stress level | 17 | 12.1 | 12.8 |
| Team coordination | 59 | 41.8 | 54.6 |
| Team work | 1 | .7 | 55.3 |
| Time management | 27 | 19.1 | 74.5 |
| Work experience | 36 | 25.5 | 100.0 |
| Total | 141 | 100.0 | |




## DISCUSSION:

Analyzing the variables influencing operation theater (OT) staff productivity, efficiency, and decision-making offers important insights into the dynamics of surgical teams. This discussion provides a thorough comparison and contrast by integrating the findings with the body of previous literature. According to the findings of the earlier study, managers can increase team productivity by taking into account two factors: team familiarity and prior shared experience. By dissecting team familiarity into horizontal and hierarchical components, it was shown that the inclusion of failure-based familiarity demonstrated that pairing people who have failed together in the past might actually inspire more productivity in the future.[8]

The self-assessed job efficiency ratings of the respondents varied, with a significant percentage evaluating their efficiency as low (1 or 2). This self-perception could be a reflection of deeper problems like insufficient assistance or training. Leadership style and organizational structure have a major impact on decision-making efficiency, which in turn affects total productivity,

according to a study on factors impacting employee productivity. A sizable portion of respondents said that weariness occasionally (45.4%) or frequently (14.9%) impacted their performance. This result is in line with research showing how weariness negatively impacts clinical performance and patient safety. Most respondents (65.2%) said they had received enough training to make decisions, while a sizeable minority (17.0%) were unsure or disagreed (17.7%).

This implies that even if a lot of people feel ready, training initiatives could use some work. For employees to be empowered to make knowledgeable decisions and increase productivity, effective training is essential. Similarly, 66.7% of respondents said they were confident in their ability to make decisions, which suggests that they had a generally positive opinion of themselves. The doubt or lack of confidence expressed by the remaining respondents, however, emphasizes the necessity of continued assistance and training. It has been demonstrated that leadership philosophies that encourage independence and accountability boost workers' confidence in their ability to make decisions. The decision-making atmosphere at work was rated differently by respondents, although a sizable percentage gave it a favorable assessment (4 or 5) or a moderate grade (3). Higher employee satisfaction and productivity are linked to a favorable decision-making environment. While some respondents were unsure (17.7%) or disagreed (36.2%), over half (46.1%) said their job was stress-free for making decisions. Effective decision-making and general productivity are enhanced in a stress-free setting. Time management (19.1%), work experience (25.5%), and team cooperation (41.8%) were the most often mentioned criteria affecting decision-making. This is consistent with research that highlights the value of experience, teamwork, and time management in making wise decisions.

Most respondents said that their workload affected their decisions occasionally (42.6%), frequently (16.3%), or usually (19.1%). Excessive workload

has been found to have a major impact on productivity and decision-making effectiveness. Workplace productivity was rated differently by respondents; a significant percentage gave it a moderate (3) or low (1 or 2) ranking. This self-evaluation could be a reflection of workplace issues that prevent maximum productivity. Productivity can be adversely affected by elements like a heavy workload, poor team cohesion, and insufficient training. The results of this analysis are consistent with a number of earlier studies that highlight how important teamwork, proper training, and efficient time management are to raising productivity and efficiency in OT settings.

## CONCLUSION

This study looked at the variables influencing OT staff members' productivity, efficiency, and decision-making, emphasizing the role of time management, teamwork, and work experience. The results highlighted the necessity of organized training programs by showing that the majority of respondents were OT techs with less than a year of experience. Two significant issues were the influence of weariness on production and the frequent delays caused by equipment.

## REFERENCES

1.Fayyaz M, Tahir HMS, Muneer B, Naeem U, Akram F, Islam B. A relative review of Operation Theater Environment management. Pakistan Journal of Health Sciences [Internet]. 2023 Mar 31;02–8. Available from: https://doi.org/10.54393/pjhs.v4i03.562

2. A van As, Sebastian.vanas@uct.ac.za, Red Cross War Memorial Children's Hospital, Childsafe South Africa, Z Brey, Office of the Dean, UCT Medical School, et al. Improving operating theatre efficiency in South Africa. Vol. 101, SAMJ. 2011 Jul.

3. Healey AN. Developing observational measures of performance in surgical teams. BMJ Quality & Safety [Internet]. 2004 Oct 1;13(suppl_1):i33–40. Available from: https://doi.org/10.1136/qshc.2004.009936

4. Moutlana H, The Author(s). FCA REFRESHER COURSE [Internet]. Vol. 27, South Afr J Anaesth Analg. 2021 p. S182–5. Available from: http://www.sajaa.co.za

5.Rennie SC, Van Rij AM, Jaye C, Hall KH. Defining Decision making: A qualitative study of international experts' views on surgical trainee decision making. World Journal of Surgery [Internet]. 2011 Apr 7;35(6). Available from: https://doi.org/10.1007/s00268-011-1089-4

6. Allard M a., Blanié A, Brouquet A, Benhamou D. Learning non-technical skills in surgery. Journal of Visceral Surgery [Internet]. 2020 Apr 25;157(3):S131–6. Available from: https://doi.org/10.1016/j.jviscsurg.2020.03.001

7. Hanani S, Payandeh M, Amiri F, Azadi N, Khalilpour A. Investigating the effect of the 7S technique on performance management and productivity of operating room staff: an interventional study. Avicenna Journal of Care and Health in Operating Room [Internet]. 2023 Oct 15;1(2):44–51. Available from: https://doi.org/10.34172/ajchor.18

8. Avgerinos E, Fragkos I, Huang Y. Team familiarity in cardiac surgery operations: The effects of hierarchy and failure on team productivity. Human Relations [Internet]. 2019 Oct 1;73(9):1278–307. Available from: https://doi.org/10.1177/0018726719857122

9. Fioratou E, Pauley K, Flin R. Critical thinking in the operating theatre. Theoretical Issues in Ergonomics Science [Internet]. 2011 May 1;12(3):241–55. Available from: https://doi.org/10.1080/1464536x.2011.564482

10.Ramadanov N. Teamwork in a surgical department. Chapter.

11. Kawaguchi AL, Kao LS. Teamwork and surgical Team–Based training. Surgical Clinics of North America [Internet]. 2020 Nov 2;101(1):15–27. Available from: https://doi.org/10.1016/j.suc.2020.09.001

12.Admasu B, Abdela A, Temamen T, Dagmawit B, Symbiosis Group, Jimma University Institute of Health School of Nursing and Midwifery, et al. Job Satisfaction and Associated Factors among Nurses Working In the Operation

Theater at Government Hospitals of Eastern Ethiopia, 2017. Palliative Medicine & Care: Open Access [Internet]. 2018 Jun 18;1–7. Available from: https://www.symbiosisonline.org

13.Deshpande SP, Deshpande SS. Career satisfaction of surgical specialties. Annals of Surgery [Internet]. 2011 Mar 30;253(5):1011–6. Available from: https://journals.lww.com/annalsofsurgery/abstract/2011/05000/career_satisfaction_of_surgical_specialties.26.aspx

14.Critical care practice environment, burnout and decision-making ability among staff nurses at a selected teaching hospital. SSRG Int J Nurs Health Sci 2019;5(1):6 Available From: http://www.internationaljournalssrg.org. 2019 May;(2019;5).

15. Long B. Factors affecting Organizational performance: A study on four factors: motivation, ability, roles, and organizational support [Internet]. SRAWUNG (Journal of Social Sciences and Humanities).Available from: https://philpapers.org/archive/BUNFAO.pdf

16 Zaubitzer L, Affolter A, Büttner S, Ludwig S, Rotter N, Scherl C, et al. Time management in operating rooms (ORs) – a retrospective study to evaluate estimated and objective durations of surgical procedures in the field of ENT. Research Square (Research Square) [Internet]. 2020 Jun 9; Available from: https://doi.org/10.21203/rs.3.rs-29804/v1

17. Srivastava P, Shetty P, Shetty S, Upadya M, Nandan A. Impact of noise in operating theater: A surgeon's and anesthesiologist's perspective. Journal of Pharmacy and Bioallied Sciences [Internet]. 2021 Jun 1;13(Suppl 1):S711–5. Available from: https://doi.org/10.4103/jpbs.jpbs_656_20

18. Cevik J, Hunter-Smith DJ, Rozen WM. The importance of perioperative team familiarity and its contribution to surgical efficiency and outcomes in microsurgical breast reconstruction. Gland Surgery [Internet]. 2022 Dec 27;12(1):1–4. Available from: https://doi.org/10.21037/gs-22-672

19.Hanani S, Payandeh M, Amiri F, Azadi N, Khalilpour A. Investigating the effect of the 7S technique on performance management and productivity of operating room staff: an interventional study. Avicenna Journal of Care and Health in Operating Room [Internet]. 2023 Oct 15;1(2):44–51. Available from: https://doi.org/10.34172/ajchor.18

20. McLaughlin MM. A MODEL TO EVALUATE EFFICIENCY IN OPERATING ROOM PROCESSES. 2012