JOB ROTATION'S EFFECTS AND EMPLOYEES' ACHIEVEMENTS: THE CASE OF THREE HOSPITALS AT NORTH LEBANON

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Master of Science in Business Strategy

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by

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Dedication

I would like to dedicate all this work to my beloved parents who were always by my side, encouraging me to achieve my highest potentials. A special feeling of gratitude for their patience and efforts that created the person I am today.

I also dedicate this thesis to my supportive friends and to each person who inspired me throughout the study; lucky to have you in my life, you are such a blessing.

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All my respect and appreciation for the group of people who contributed a lot to my thesis and who helped me in coming up with the needed information.

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I would like also to acknowledge the support of the HR managers at Nini Hospital, Borji Hospital and FMC as well as all the personnel especially nurses; because without their cooperation I couldn't be able to proceed.

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Abstract

Purpose -- This research attempts to study the effects of adopting job rotation on nurses at three main hospitals located at North Lebanon since those members are frequently subject to job rotation.

Design/methodology/approach – A positivist epistemology and a deductive reasoning approach were adopted. A questionnaire was developed and distributed manually, 106 responses were received. A linear regression and correlation analysis were performed using SPSS program.

Findings – The quantitative findings of this research showed that the adoption of job rotation at the hospitals in search enhances nurses' competencies and performance; it has a positive impact on their satisfaction and is seen as an effective training tool as well.

Research limitations/implications – In this research, the first limitation faced was in getting the approval of hospitals to distribute questionnaires, the second one was the lack of researches related to HR and job rotation in Lebanon.

Practical implications – The findings of this research will be considered as a reference for further studies that tackle the effects of job rotation or one of the used variables. Moreover, it will help hospitals' directors and managers when it comes to decision making or strategies proposal while dealing with potential human resources challenges.

Originality/value – This research is one of a kind in Lebanon. Although job rotation in banks was a subject of few studies, however the effect of this concept at hospitals is not studied yet.

Keywords – Job rotation, skills, performance, satisfaction, training.

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Chapter 1

1. Introduction

1.1 General background

Today's global development, accompanied with the worldwide rapid growth in all fields, as well as the emergence of new inventions day after day, requires the intense attention of all companies (Dirani and Kuchinke, 2011). This international openness and progress contribute to creating the concept of competition thus adding more challenge to the world of business; where all the existing companies strive for building a distinguished competitive advantage compared to their rivals (Hashim et al., 2014).

It is crucial to recognize that traditionally, the process of building a competitive advantage, which serves as a robust wall in front of potential competitors, did not exist. This was so because industries were narrower, less developed and based on standardized mechanisms (Eriksson and Ortega, 2006). That's why differentiation and sophistication were not needed; the organizations were depending on some traditional procedures to run the business. Moreover, the common belief was that each employee is specialized in his/her own task and modifying the types of tasks will turn out to be ineffective.

The effect of employees cannot be neglected when it comes to sustainability since they are more than just staff but human capital and assets for the company. Through their efforts, the organization will be able to struggle against business battles, to realize its corporate objectives and to stay alive. Nowadays, the best way for a company to survive is staying up-to-date through keeping its personnel in touch with all possible

technologies. The success or failure of an organization is directly related to the performance and technological openness of the workforce (Mohan and Gomathi, 2015).

From this manner, the most effective results can be obtained through training which consists of updating employees' knowledge and skills in a way that promotes their uniqueness and enhances their performance as well (Al-Marzouqi et al., 2014). Abou Hamad et al. (2016) started their research by stating that: "not long ago, companies started investing millions of dollars on training and educating workforce" (p.1). To elaborate more, considering those expenses as investment was so relevant because the sacrifice of money will end up improving the performance of employees and thus positively affecting the company as a whole.

For the purpose of improving the training process, job rotation is lately considered one of the most beneficial tools; it is becoming a necessity for any business (Mahalakshmi and Uthayasuriyan, 2015). This is so, simply because it provides a tangible experience acquired from day to day operations. Job rotation is defined as the process through which workers move from one position to another, where new tasks are assigned far from the ordinary known responsibilities (Al-Marzouqi et al., 2014). This system is also called "on-the-job training" because it allows staff personnel to obtain additional skills and diversified expertise, almost in all organizational positions. According to Mohan and Gomathi (2015), the concept of job rotation is highly perceived in hospitals, banks and manufacturing companies as well.

Hospitals are considered one of the best workplaces to study the effects of job rotation, due to many reasons: first, they are characterized by the diversity of their employees, second, they have a wide geographical distribution and third they are known by the

availability of data. All three factors combined together facilitate the generation of crucial information for any research. In order to conduct this research, we choose the case of three hospitals located at North Lebanon (Nini Hospital, FMC and Borji Hospital). The concept of "job rotation" is an important concept which is worth studying, thus analyzing its impact on nurses' performance and on the hospital as a whole, is quite interesting.

1.2 Purpose of the study

Since job rotation is a complicated issue that requires the attention of all departments and needs a prudent implementation strategy as well, it should be analyzed from different perspectives to determine whether it is worth adopting. That's why this research attempts to study the effects of this concept at hospitals through the responses of nurses since those members are frequently subject to job rotation. The aims of this research will be accomplished through answering the following question: "To which extent Lebanese nurses perceive job rotation as a significant factor in improving their competencies and performance?"

The obtained results are aimed to be used as a reference for further researches that tackle job rotation or that are related to any of the used variables.

1.3 Overview

This research is mainly intended to achieve a deep comprehension of the concept of job rotation in a way that clarifies its effects on employees, more specifically on nurses who are the main subjects to be tested. After introducing the topic widely in the first chapter, the second one comes to add some information relative to a variety of previous researches concerning job rotation and its derivations. In this chapter, each variable is

explained solely and is supported by some reliable studies retrieved from credible sources. The third chapter tackles the followed methodology and procedures as well. Its first part states how hypotheses into test were derived and then the different kind of variables are released. In its second part, data collections tools, techniques and the undertaken statistical package are specified in details. The fourth chapter is purely quantitative and numeric. All the necessary calculations and estimations are showed in detailed tables, followed by a clear interpretation of the results. The last chapter will be a summary of the whole research, where results are properly associated with theories. The latter will end up with mentioning some constructive recommendations found out to be appropriate in the eyes of the researcher.

1.4 Hospitals in search

1.4.1 Nini Hospital – Tripoli

It is located at Tripoli (North Lebanon), founded in 1928 by Dr. Wahib Nini. Managed by Nini family members, this hospital became one of the largest healthcare establishments at North Lebanon. Its main mission is to provide the best service quality through maintaining cost-effectiveness, high quality of services, technological advancement and community development as well. Just like any establishment, this hospital has its own set of core values which are the following: high quality care, professionalism and continuous improvement, integrity, responsibility, accountability and teamwork. The medical services provided at Nini hospital are diversified and cover different spectrums including:

- **General Surgery**
- **Pediatrics**
- **Cardiology (catheterization and cardiothoracic surgery)**
- **Intensive Care**

- **Neonatal Intensive Care**
- **Orthopedics**
- **Urology**
- **Oto-Rhino-Laryngology**
- **Oncology**
- **Nephrology** (with renal dialysis unit)

The team is composed of 200 physicians and 400 medical/administrative staff; always operating according to a certain quality management system relative to International Organization for Standardization (ISO).

1.4.2 Borji Hospital – Amioun (Al koura)

This hospital was established since 1948 by Dr. Nasrallah Al Borji, who was an AUB graduate back then (1902). It was the first hospital at North Lebanon; its main purpose was to provide the best quality of services at Al Koura and its peripherals. Today, the number of employees is approximately 115 (administrative employees, nurses and doctors), all working towards achieving the previously mentioned aim. The hospital is mainly composed of nine departments:

- **Chirurgical**
- **Medical**
- **Pediatric**
- **Gynecology**
- **Cardiology**
- **Intensive care**
- **Radiology**
- **Laboratory**
- **Urgency**

Al Borji Hospital is recently under renovation and development of “Trauma center” that will be highly equipped with developed machines and utensils to save the difficult cases, hence contributing to its main mission.

1.4.3 Family Care Center (FMC) – Zgharta

The hospital is founded in 2014 by Dr. Kayssar Mawad, located at Zgharta- North Lebanon. Its operations and services are all devoted for the purpose of being a leader over the healthcare establishments at North Lebanon. The hospital obtained an accreditation from the Ministry of Health in 2016. The team comprises more than 380 highly qualified persons including doctors, nurses and administrative employees, all working for the same objective towards providing the ultimate service. FMC is equipped with the trendiest machines and with special medical utensils. The operating departments are the following:

- **Diagnostic services** including: laboratory, radiography, Scanner, IRM, Mammography, Echography, Osteodensitometrie …
- **Department of Cardiology**
- **Department of Oncology**
- **Department of Nephrology**
- **Department of Gynecology**
- **Pediatric department**
- **Chirurgical department**
- **Department of Ophthalmology**
- **Department of urgency**

Chapter 2

2. Review of literature

2.1 Introduction

In this chapter, variables related to job rotation and employees' achievements will be discussed deeply and their effects will be viewed from different perspectives, according to different researchers and various theories in order to make everything clear and to reach the main purpose of this study.

2.2 Job rotation

From the wide variety of topics in Human Resource Management; "job rotation" is considered a major and essential one especially nowadays due to the need of continuous enhancement to cope with the rapid growth in the world of business. Job rotation is not a recent issue; traditionally its importance and its effects have been the subject of several studies (Sims,1990; Huang,1999; Hashim et al., 2014; Arora and Talwar, 2019) ... In general, banks, hospitals and manufacturing firms are the most common workplaces where job rotation is applied.

Relative to Malinski (2002) job rotation is an organized movement of staff from one job to another; moreover, it is a way to retain employees because when they recognize that the company is concerned with their development and competencies they will not search for another satisfying job.

According to Jorgensen (2005) job rotation is the process of engaging employees in different tasks or positions for the purpose of maximizing employees' knowledge and performance as a whole. Moreover, the idea behind job rotation is involving employees into diverse tasks each one with a different set of skills and competencies, so they can explore their hidden capabilities and perform upon them (Asensio-Cuesta

et al., 2012). From this manner, the rotating staffs end to be more satisfied and able to run the business smoothly in case of any unexpected situation such as absenteeism or leaves of peers.

Job rotation is defined as the systematic movement of employees from one position or task to another. Usually job rotation comes under diverse forms relative to the needs and capacities of the organization (Malinski, 2002).

In this concept, two types of job rotation were identified by Bennett (2003):

- **Within-function rotation:** takes place when employees are involved into rotations and swaps within the same organizational levels or functional areas.
- **Cross-functional rotation:** is defined as the movement of employees from one task to another in a different department or functional level. This method secures a wider scope development on the level of individuals (Bennett, 2003).

2.2.1 Benefits of job rotation

Job rotation is also known as cross training or on-the-job training and it is considered as an essential tool for the developmental process of any company (Zeira, 1977 in Huang, 1999). It is called so because through turning from one position to another, employees learn new skills while developing theirs. Therefore, they gain a remarkable experience in the field which has a direct positive effect on efficiency and effectiveness (Huang, 1999).

According to Chang et al. (2009), who studied the impact of job rotation among nurses, the implementation of this concept helps employees to discover all the facets of their workplace, and master their tacit knowledge.

Lips-Wiersma and Hall (2007) viewed that achieving the organizational missions and goals is directly related to the development of four crucial areas including:

- Developing the skills and performance of employees through widening their opportunities.
- Insuring strategic integration of employees such as allowing them to take part in the decision making process.
- Insuring cultural integration through hiring people from different cultures which ensures a healthy workplace where diversity is widely accepted.
- Improving communication between employees among each other on one hand and between the management and employees on the other hand through relying on flexibility and transparency.

From this manner, those previously mentioned factors are definitely secured with the implementation of job rotation in the organization whether public or private (Lips-Wiersma and Hall, 2007).

Bennett (2003) came up with a list of positive outcomes that can be gained by employees due to job rotation:

- Job rotation helps in accelerating the development of new staff members.
- Through job swaps, employees' knowledge of the organization, its objectives and its function, is highly guaranteed.
- Cross-functional job rotation can lead to a greater understanding by employees of the many functions of the organization.
- Job rotation can contribute to the development of social skills through the new relationships gained with other employees across the organization.

- Skill diversity may help employees to meet the minimum qualification of jobs for future career advancement.
- Serious commitments can be seen from the part of employees when all the organizational efforts are devoted to develop their abilities and core competencies.
- Diversified job assignments can entice employees to be more enthusiastic at work and provide more skills to avoid redundancy.

Throughout the years, and according to the majority of researches, it has been agreed that in general the benefits of job rotation outweigh its disadvantages; its positive outcomes are for the good of the company and of employees as well.

First of all, job rotation's upmost impact is noticed on job development since it enriches multitasking issues (Asensio-Cuesta et al., 2012). In other words, the operations will not be interrupted in case of absenteeism or in case of any sudden change because through applying this concept, employees turn out to be well-equipped with all necessary knowledge.

Adjei (2012) stated that while being subject to job rotation, employees develop new skills making them more adaptable to any possible change compared to those who work in a single domain.

Job rotation is also an effective tool that helps managers in identifying the abilities, core competencies and talents of each employee, therefore having a kind of guaranteed job fit (Asensio-Cuesta et al., 2012). From this manner, it would be easier for the organization to allocate its human capital properly, the right person in the right place.

A research done by Kaymaz (2010) helped in discovering a new set of advantages for job rotation including an enhanced performance, flexibility, team work as well as a reduction of boredom and corruption.

When it comes to the manufacturing field that requires a high level of physical effort, it has been proved that implementing job rotation is the best solution to avoid musculoskeletal disorders and to reduce fatigue so the worker feels more comfortable and satisfied (Asensio-Cuesta et al., 2012). In their article, Kennedy and MacLeod (1993) stated that when it comes to risk of injury, job rotation should be used as a preventive measure. According to their analysis, shifting from one task to another continuously, especially in manufacturing firms, is not a way to remove risk but it can help in distributing or reducing it. This point of view is reflected in the figure below:

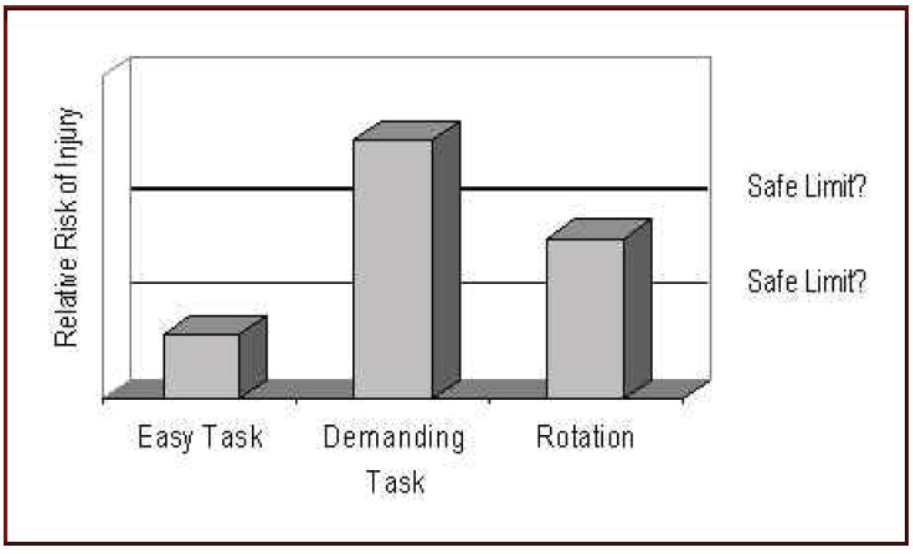

Figure 1: The averaging effect of" job rotation" **(**Kennedy and MacLeod ,1993)

In addition to the previously mentioned pros, the remarkable effect that job rotation has on the tacit knowledge should be taken into consideration. In their research, Lu and Yang (2015) distinguished two types of knowledge: explicit and tacit. The explicit knowledge is the one that can be transferred from one employee to another and it can be easily and quickly acquired. However, the tacit knowledge is much more complicated because it cannot be transferred and the most interested part in the latter is that it cannot be imitated or copied. It is so specific since it is directly related to the know-how, culture and vision of the person. The two researchers proved that job rotation is a tool that optimizes the learning mechanism; moreover, it conserves tacit knowledge in case a certain specialized employee leaves the company (Lu and Yang, 2015).

2.2.2 Challenges of job rotation

The direct relationship between job rotation as a restructuring strategy and the concept of change transforms this systematic process to a challenging one where all the efforts are directed towards progress and towards achieving the upmost outcomes.

Hagberg et al. (1995) mentioned in their study that performing the same tasks and undertaking the same responsibilities for a long time deters the employee from noticing potential discrepancies, thus the possibility of finding ways to enhance the system will be very low. Moreover, they found out that task repetition at work may be unhealthy because it can lead to boredom, laziness and fatigue (Hagberg et al., 1995). Here the biggest challenge takes place in knowing exactly how to manipulate organizational systems in a way that reduces employees' boredom and boosts their satisfaction level for better performance.

Three different challenges were also identified by Malinski (2002) as follow:

- Determining the type of job rotation.
- Clarifying the process of changing the work structure.
- Taking into consideration the type of staff training and the length of the learning period.

2.2.3 Effective implementation of job rotation

Job rotation is a concept related to system's redesign, and the latter is not as easy as it seems. The adoption of such program requires a full analysis, a prudent planning and an appropriate implementation for better outcomes. Kennedy and MacLeod (1993) in their study have suggested a nine-step plan for the purpose of reaching the ultimate implementation of job rotation with reduced risks.

1) For an effective start, it is crucial to organize a general meeting with all staff; within which the program is clearly presented. Moreover, at this stage, the opinions of employees are to be taken into consideration because this gives an idea whether the implementation will be appropriate and suitable for them or not.
2) Making sure that Physical Job requirements worksheet (PJA'S) are exact and reflect what is needed no more no less, for the employee to know what is required in every position.
3) Studying all the facets of the implementation including: the ability and readiness of employees to cope with the change, the required logistics, employee' insights …
4) Making sure that employees have a full understanding of what they may confront while accomplishing their new tasks. If not, an appropriate

training is needed in order to make sure that the position being rotating for will be properly handled.

5) Give employees "break-in" time which is a period for them to be psychologically and physically ready for that change.
6) Starting job rotation.
7) Managing the new program closely while observing individuals' performance. In case any difficulty or misunderstanding is detected, inserting some accommodations will be a must.
8) Organizing meetings with the employees on a continuous basis, so the program is analyzed effectively. Furthermore, by doing so there will be a room to solve any inconvenience detected by employees which renders the program more effective.
9) Measuring the effect of job rotation on employees' satisfaction, development, self-esteem …

According to Kennedy and MacLeod (1993) organizing the rotational program upon the previously mentioned steps, is a guaranteed way to embrace job rotation and to reach the optimal outcomes on the level of employees and thus on the level of the company as a whole.

Through the existence of careful feasibility study, cross-communication among all levels and with managers in addition to the presence of well-planned schedules, all organizations can take advantage from the rotational program.

Zeff (2008) proposed a set of steps to be taken into consideration for a successful job rotation's program as follows:

a) Talk with employees; discuss their opportunities and fears and try to find out what they exactly expect from their jobs.

b) Give the employees the opportunity to engage in the planning and scheduling process of the rotational program.
c) Communicate with employees about the rotation policy. What are their ideas? What works for them? What works for you?
d) As a manager, ask yourself one question: How can I make the other people around me more successful? As you put the rotation policy together, answer that question and act on it and you will have a very successful team.
e) Don't be afraid to change. If you try one rotation policy and it is not working for everyone, then try something different that may be convenient with personnel's abilities and willingness to learn.
f) Teach your employees to take ownership of their happiness and passion because those are the secured ways towards satisfaction and employees' sustainability at work.

2.2.4 Risks of implementing job rotation

Despite the numerous advantages that characterize job rotation, some disadvantages are identified in the eyes of employers or managers. Just like any issue, job rotation practices have their own set of disadvantages. First of all, it can be costly and time consuming especially in large companies where timing plays a main role to maintain the efficiency and effectiveness of operations. In this case, job rotation is considered a waste of time and a threat for the whole process (Malinski, 2002). Moreover, this concept is perceived as an obstacle in front of job specialization because while rotating, the employees may change position before reaching the optimum and before showing all his/her capabilities, so in this case specialization is negatively affected (Huang 1999). It is crucial to note also that some employees may resist change or may need time to cope with the new situation, so the regular process might be interrupted (Huang, 1999).

2.3 Competencies and performance

Nowadays, the core competencies that distinguish any company rely mainly on the strengths and on the capacities of employees. The latters are considered as the backbone that insures sustainability of the business, that's why working on their developmental process is a must. As noted by Hashim et al. (2014), performance is defined as the accomplishment of something to reach a certain effectiveness and efficiency as well.

Almost all researchers supported the importance of improving competencies in achieving the best work quality and viewed it as a key to reach an upmost level of performance whether in manufacturing companies or service ones.

Here it is crucial to mention that performance's improvement does not rely mainly on a well-functioning system but it is closely related to human resource strategies in motivating and enhancing human capital (Adjei, 2012).

Performance is defined by Hashim et al. (2014) as the accomplishment of a certain objective or target effectively and efficiently. Improving this area is an interrelated process that requires a serious effort and cooperation not only from the part of employees but from the organization too.

Huang (1999) has studied job rotation from the perspective of employees, in twenty one big companies in Taiwan. The researcher intended to measure the effects of job rotation on employees and its relationship with satisfaction and performance. He relied on two main tools in order to test job satisfaction, the first one is JDI (Job Descriptive Index) and the second one is Minnesota satisfaction questionnaire that measure the following issues related to satisfaction: a challenging work environment, good rewards, a well-organized division of tasks and a supportive management. In this context, two main

hypotheses were tested quantitatively: the first one measured the relationship between job rotation and satisfaction, the second one was elaborated to determine the views of employees regarding the effectiveness of job rotation. A total of 920 questionnaires were distributed from which a total of 481 employees responded. The regression analysis as well as the statistical study supported the hypotheses and it has been concluded that the application of job rotation has a remarkable positive effect on job satisfaction and on training programs. Moreover, the research found that job rotation is an essential tool that helps in facing different kinds of challenges at the organizational level, group level and individual level (Huang, 1999).

Another study was done by Gomathi and Mohan (2015) to study the effects of job rotation among nurses in the hospitals of Vellore District. They started by defining job rotation and stating its positive impacts on the whole performance of employees since it reduces fatigue and boredom, it increases challenges, satisfaction and it enhances various skills through experience. For them the development process is a must, for employees to understand the organizational goals better and to contribute efficiently to the sustainability of the organization as well. Moreover, in order to support their view point, they relied on Maurer and Pierce (2009) who stated that through job rotation, the overall performance of employees will be improved thus it will be easier for them to cope with the recent dynamic situations (Maurer and Pierce, 2009). The main purpose of Gomathi and Mohan's behind conducting this research was to determine whether applying job rotation at hospitals among nurses has an impact on the different kinds of knowledge and skills or not. From this manner, they studied five hypotheses related to their research. Throughout the study, each variable

had its own set of dimensions and SPSS was used for analysis. After executing all the necessary calculations and after following a prudent analysis, a significant positive relationship was discovered among the previously mentioned dimensions of job rotation. To sum up, administrative knowledge, organizational knowledge and technical knowledge were found to be the essential parts that secure employees' development. The researchers came up with the following: through job rotation, nurses can gain a better knowledge and can enrich their performance, so it is crucial to implement such concept in each hospital as a step to reach the desired corporate goals. They concluded also that job rotation is the cheapest method for training, that's why, it should be adopted everywhere for multi-tasking and efficiency purposes (Gomathi and Mohan, 2015).

In order to stress the point on the relationship between job rotation and performance, and to determine their impact on productivity, another study was conducted by Hashim et al. (2014). The study relied on three main objectives: identifying employees' perception concerning the effects of training on their performance and self-development, as well as examining whether job rotation leads to improvement or to an increased productivity. For the purpose of achieving those objectives, a quantitative approach was followed. The research included 8 random banks within which 80 questionnaires were distributed. The latters relied on a five scheduled Likert scale from which the results were analyzed through SPSS in addition to regression and reliability analysis.

Each variable had a set of dimensions widely elaborated throughout the questionnaire in way that gives the exactly needed data. After calculating the necessary ratios, Hashim et al. (2014) analyzed the obtained results prudently,

and came up with the conclusion that training always has a positive impact on the whole performance of employees as well as on their productivity.

The quality of performance is not simple to determine, it can be detected through the interaction of three main pillars (Suleiman, 1992):

- **Personal motivation:** it can be measured by employees' enthusiasm and tendency to work hard towards achieving their highest potentials, in other words, working for the best of the organization and behave like owners.
- **Workplace environment:** it is determined by the type of work, corporate policies, social relations with peers, appreciation and rewards.
- **Employees' ability:** it is reflected in the ability to perform a certain task. Usually, it is directly related to KSA's, level of education and most importantly to training.

In the light of securing the ultimate performance, it is essential to recognize that the intervention of various external factors might lead to its interruption. Mohammad (2001), in her study, has identified all the possible issues that might threaten job performance in all types of firms. The determined factors are illustrated in the figure below:

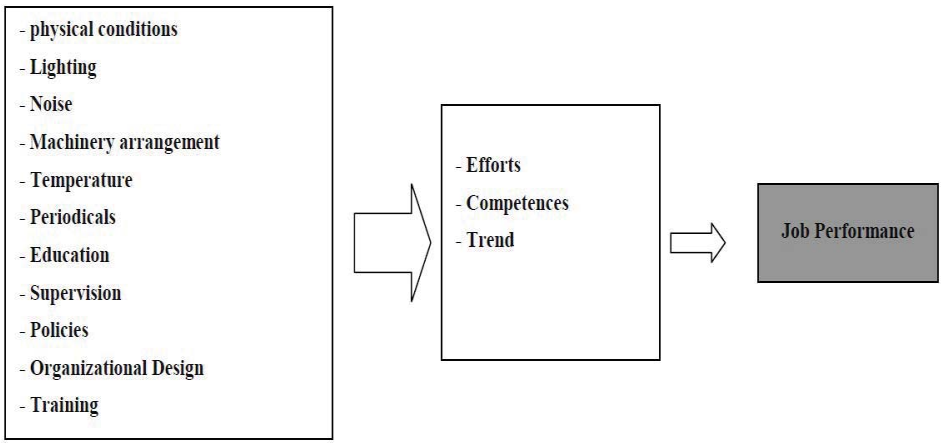

Figure 2: Environmental factors that influence performance **(**Mohammad, Rawia (2001), p.212)

2.4 Satisfaction

According to the majority of researches, nowadays the human oriented strategy is found to be much more valuable than the focus on technical issues. The human focused way works on developing employees and on contributing to their satisfaction through various tools such as job security, professional development … which contribute to an increased commitment (Kaymaz, 2010).

As for satisfaction, it is a psychological issue that has a direct impact on the overall performance and on the dedication of employees as well. In this context, it is crucial to note that a happy worker means an increased efficiency thus better outcome. Employees' motivation theory consists of considering job rotation as a tool to make sure that staffs are not bored from performing the same set of tasks (Eriksson and Ortega, 2004). Furthermore, satisfaction is not only related to businesses or organizations, it is a key factor that should take place everywhere, within all sectors even in schools and families; since it is considered very essential for securing the long-term sustainability of anything (The George Washington University, 2012). According to Pintrich (2003), two types of motivation can be identified: intrinsic or extrinsic. Motivation is called intrinsic when the desire of doing something comes from within the person who enjoys achieving his/her highest potentials; whereas the extrinsic kind of motivation is not the one that satisfies personal development and self-esteem, instead it takes place when something is done to fulfill some responsibilities no more no less and without any personal enthusiasm.

From this manner, in order to dig more into the relationship between job rotation and satisfaction, several studies will be discussed in this section so the previously mentioned relationship can be viewed from different perspectives. With the intention of studying the impact of job rotation on employees' satisfaction and commitment in

banks, Khan et al. (2012) conducted their study in Pakistan. They started with identifying the importance of banks for the maintenance of a strong economy then they talked about the necessity of keeping personnel up-to-date and motivated since the latters are considered the backbone of banks and their comfort plays a major role in the success of the business. Moreover, they insisted that securing continuous satisfaction is an indirect smart way of retaining employees and of strengthening their commitment though. Coleman et al. (1992) in Khan et al. (2012) recognized that the most effective way to secure satisfaction and commitment is taking care of employees' self-development through the implementation of various programs from which job rotation is considered the most effective. The application of this concept has a mutual benefit anyway for employees and employers together. Its positive impacts can be detected through the enhancement it provides on: the personal level, technical level and relational level (Khan et al., 2012).

Three hypotheses emerged in this study to test the positive effects that job rotation may have on employees' satisfaction, commitment and involvement.

In order to proceed, a descriptive correlation analysis was conducted with the reliance on questionnaires as data collection tool. 285 questionnaires were distributed; each one was divided into two sections: the first one was related to demographics such as age, gender, experience … and the second section contained different Likert scales that provide in depth information about satisfaction, commitment, involvement of employees and their relationship with job rotation. After computing all necessary calculations and ratios, it was discovered that job rotation has a positive effect on employee's involvement and commitment but not on satisfaction.

Khan et al. (2012) supported their findings with a study done by Yinhua (1994) who stated that job rotation may be harmful sometimes in terms of enthusiasm and

productivity. Relative to his analysis, when the employee becomes more professional in his/her career, the fear of changing the demanded tasks increases due to the difficulties associated with accepting change. In this case, the person feels less motivated which leads to a reduced performance, thus a poor productivity (Yinhua, 2004).

Akbari and Maniei (2017) also studied employees' satisfaction but this time in an insurance company. First of all, they talked about job rotation in general and its positive influence organizationally and individually. When it comes to the company, job rotation serves as a tool that strengthens planning and problem solving skills, in terms of individuals it is considered a way to secure an overall development (Akbari and Maniei, 2017). The tested population consisted of 100 employees who answered two questionnaires, one related to job rotation and the second one related to satisfaction, and then the results were analyzed using SPSS. This research was based on three main hypotheses: the first one suggested that the preparation of management for job rotation has a positive influence on satisfaction, the second one detected that correct positioning affects satisfaction positively and the third hypothesis the improvement of social interactions through job rotation has a positive impact on satisfaction. The corresponding results confirmed the first and the second hypotheses while rejecting the last one related to social relationships. So to conclude, according to this study, job rotation was found to be very effective in all organizations and its effect as a contributor to satisfaction was highly supported (Sims, 1990).

2.5 Training

Within the market place, no doubt that each business should strive for survival and for financial benefits through improving performance, from this manner, it is crucial to recognize the importance of training for human resources enhancement.

Training, as defined by Beardwell and Holden (2001), is a learning mechanism that occurs over a period of time as a way to create a permanent development of individuals' skills and capacities so they can transfer the acquired competencies into various working areas.

As stated by Robert and Shamsuddin (2000), companies that gave a greater attention to training and development, witnessed a higher profitability and employee's satisfaction, compared to other companies that did not follow this technique.

In this context, two main types of training can be identified:

- Formal training is defined as a well-organized framework or program following a certain schedule for individuals' development purposes. Training can be carried out within the company (on-the-job) or outside (off-the-job) relative to the knowledge that needs to be acquired (Shayo et al. 1999, cited in Wu and Rocheleau 2001).
- Informal training: counter to the formal training, the informal one arises spontaneously and is known for being unstructured. It takes place when there is a need to develop some skills out of a sudden and unexpectedly (Coombs 1985, cited in Wu and Rocheleau 2001).

Training and development through job rotation has showed its strong positive impacts most of the times not only on employees' skills but also on their moral and self-satisfaction (Sims, 1990). In other words, training is found to be the ultimate tool that enriches the knowledge and skills of workforce which contributes to a better understanding of organizational processes thus in this case the goals can be fully achieved.

Training and development is one of the top concerns of Human Resources Management (HRM) through which new abilities are acquired, KSA's are developed and overall behaviors are improved in a way that entices the person to stay up-to-date

and ready to accept any possible challenge (Berber and Slavic, 2016). In their study, Arora and Talwar (2019) have identified two main factors reflecting the need for implementing the concept of training: change and development. The idea was that when there is an intention for change, training should be mostly considered because it will lead definitely to development not only on the personal level but also on the level of performance and productivity as a whole; then development contributes to change. So the latter works like a cycle where each factor leads to another (Arora and Talwar, 2019).

The previously mentioned logic is clearly illustrated in the figure below:

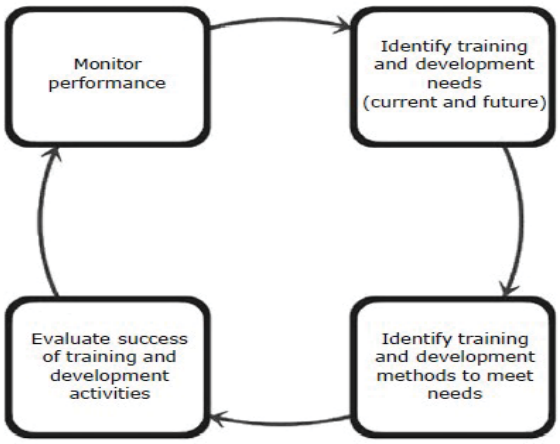

Figure 3: The Training and Development Cycle **(**Thames Valley Management Consultants Limited 2004)

When it comes to discussing training and its effects it seems crucial to tackle "ADDIE" design model since training is one of the most important tools of learning. ADDIE model is defined as an instructional system design (ISD) usually used by educational and training designers for its simplicity in order to evaluate the effectiveness of the training program (Kaminski, 2007). ADDIE stands for: Analysis, Design, Development, Implementation and Evaluation.

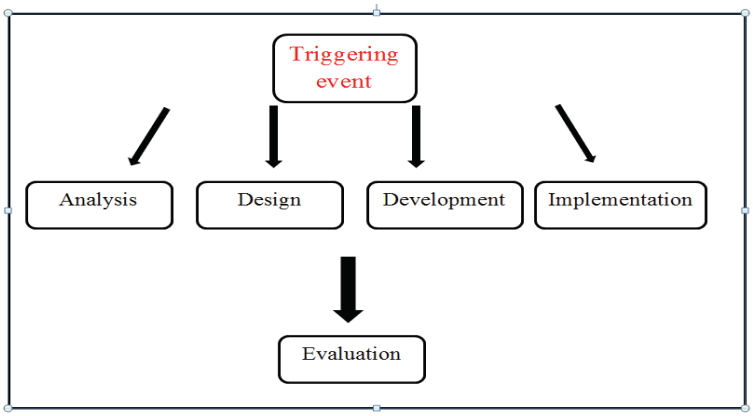

Figure 4: ADDIE training process

Analysis: This phase is in place to determine the gaps in learners' knowledge, skills and behavior and at the same time to focus on the aimed objectives. Briefly, a need analysis is required at this stage, while figuring out the constraints and possible resources to solve the problems.

Design: In this phase the strategy to be adopted is developed in a systematic and specific way. Here, the focus is on learning objectives, methods, planning and media selection with a prudent attention to all the details.

Development: Within this phase, all the tools and procedures which are specified in the design stage are assembled by the designers. In other words, here a product is created followed by a pilot testing to correct and modify if necessary.

Implementation: This stage is in place to introduce the new design to learners effectively and efficiently. During this stage, it is essential to make sure that information is being clearly transferred to learners in order to avoid any misunderstanding that may interrupt the process.

Evaluation: In this stage, the main focus is on determining the extents to which objectives are achieved and needs of learners are met. It includes a formative

evaluation (for each stage alone) as well as a summative evaluation (for the instructional program as a whole).

In their article, Doe and Reio (2018) came up with a different logic concerning training. They studied the power of cross-training in reducing job stressors through the implementation of different managerial concepts that play a major role in human resources enhancement. The main issue taken into consideration is CTSDL (cross-training through self-directed learning) in order to increase employees' efficacy and satisfaction at work. According to them, a toxic and stressful work environment will surely lead to inefficacy and to a high turnover rate. This logic was empowered by the research of Abrams and Berge (2010) who found out that cross-training (in other words, job rotation) is considered a developmental strategy that creates a multi-skilled person whether technically or interpersonally, able to handle all possible scenarios by having an idea about everything within the company. In this case, productivity increases accordingly, satisfaction and comfort are secured from the part of employees, all those factors together are key for an improved competitive advantage over potential rivals and then for a guaranteed long-term sustainability (Abrams and Berge, 2010).

For the purpose of studying the relationship between Training and Development (T&D) and organizational performance, a study was done by Berber and Slavic (2019) within different countries in the Danube region. Questionnaires were used as data collection tool and they were filled by the HR managers and employees of numerous private and public organizations. The research constituted of five main hypotheses tested quantitatively. The final results showed that training is an effective tool for high performance and for work efficacy; however some organizations are not

investing a lot in this section. So the recommendation was to give training and development a larger attention since it is one of the most crucial pillars for a better efficiency and for a secured corporate sustainability (Berber and Slavic, 2019). The influence of training on employees' satisfaction and commitment was another subject to study by many researchers. Iram et al. (2014) tried to show this relationship in a different way, far from the ordinary classical known researches. Instead of testing some proposed hypotheses, they came up with a new system for an enhanced training program. In order to reach an accurate study, they started with a detailed analysis of eight previously adopted models. The main objectives behind this step were to identify the effects of each model on employees' satisfaction and then to detect all the gaps that need correction. This step was followed by proposing a training model, found to be effective and relevant. The latter is illustrated in the figure below.

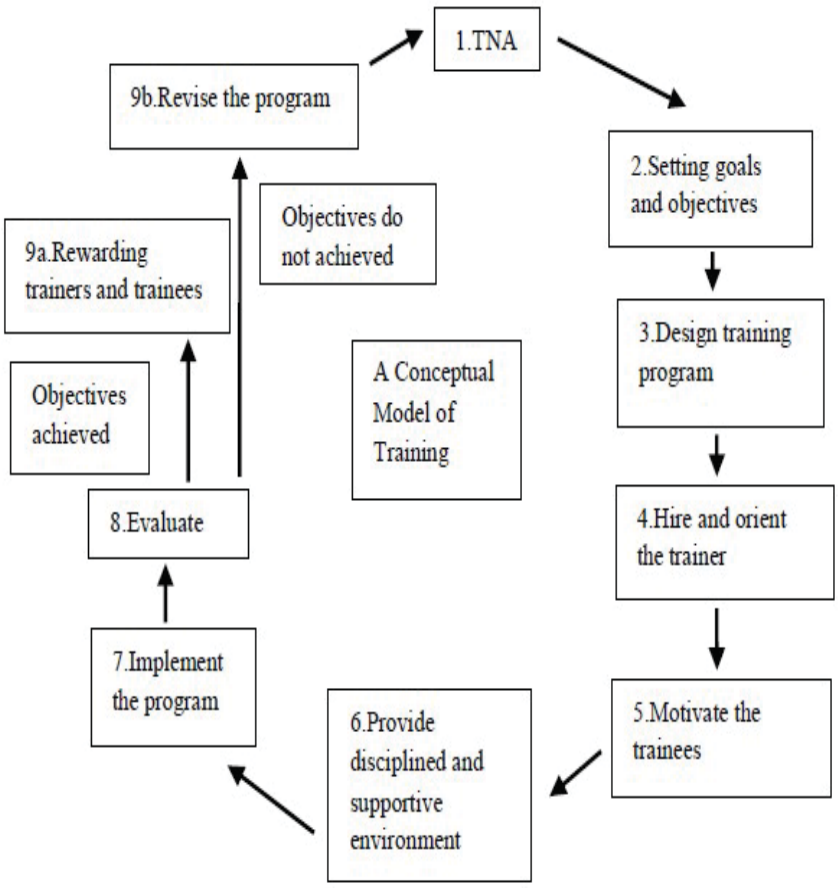

Figure 5: Developing and Proposing a Conceptual Model of Training for Corporate World **(**Iram et al., 2014)

As shown within the model, the first step to undertake is Training Need Assessment (TNA) through observations and surveys for the purpose of identifying whether there is a need for a developed training program or not. Then, a clear plan is needed to determine the main objectives and targets to be reached in coordination with a specialized trainer who is also responsible for trainees' awareness about the importance of the program for improvement. The next step is program implementation with continuous monitoring and evaluation. In case the intended outcomes are achieved, the employees should be rewarded properly to secure their satisfaction and enthusiasm for better performance. If the model did not work out, it should be modified in a better way to proceed with an enhanced training program.

The main conclusion is that training is a form of investment that should be implemented appropriately in order to secure attention and commitment from the part of employees. In other words, training if training implemented in the right way, it will be considered a robust pillar of trainees' satisfaction and commitment, thus a better organizational performance and competency (Iram et al., 2014).

2.5.1 Training and development methods

Jackson and Schuler (2003) stated that training and development are one of the most remarkable pillars of HRM (Human Resources Management) and they always have a close positive relationship together. Usually, companies mainly adopt two methods to train their employees: on-the-job training and out-of-job training, depending on many factors such as: organizational goals, financial resources and training duration …

To begin with on-the-job training, here are the main methods relative to Blanchard and Thacker (2006).

a. **Job rotation:** This kind of training consists of moving individuals from a position to another at the same business level or from a department to another within the same company. Through job rotation, employees gain a wider knowledge and become multi-skilled as well.
b. **Mentoring:** The latter is done with the supervision of a skilled person, who guides the trainee and provides continuous feedback in order to improve performance.
c. **Job instruction:** Within this method, the trainer explains to trainee how to perform a certain task in the right way and provide him/her with some tips to develop his/her skills as well.
d. **Committee assignments:** Takes place when a group of trainees is asked to find a new efficient framework or to solve a certain organizational obstacle. Beside the purpose of training employees, this method is an effective way to develop teamwork spirit.

Blanchard and Thacker (2006) also identified the adopted off-the-job training methods as follows:

a. **Conferences:** This method consists of assembling a large number of trainees together to provide them with all necessary explanations, similar to giving a lecture.
b. **Audio-visual:** The latter relies on multimedia such as videos, audios and presentations to clarify job duties.

c. **Role playing:** Within this method, trainees are asked to act under different scenarios or to find solutions to changing situations.

d. **Simulation:** This kind of training is usually adopted in critical tasks such as navigators and airlines pilots, where people are trained on specific machine depicting real world experience.

e. **Case studies:** Here trainees are asked to analyze some situations and suggest the appropriate solutions. The proposed solutions are deeply discussed which helps in the decision making process.

2.6 Conclusion

In general, this chapter (review of literature) helps to derive the appropriate hypotheses and serves as a core basis on which the whole research will be built. This section gave an idea on what the research is all about. In this part, mainly the dimensions taken into consideration has been clarified and explained deeply with the support of some proved studies, retrieved from reliable sources.

Chapter 3

3. Procedures and methodology

3.1 Introduction

This chapter contains a detailed description of the methodology adopted within the research. In other words, additional information will be provided concerning the research method and approach, data collection tools, research procedures, sample selection, statistical techniques…

3.2 Research aims and questions

The aims of this research will be accomplished through answering the following question:

"To which extent Lebanese nurses perceive job rotation as a significant factor in improving their competencies and performance?"

In addition to the main question, this research will be accomplished through answering the following questions:

- How job rotation could impact the knowledge of nurses?
- To which extent job rotation is applied at Lebanese hospitals?
- Is it essential for hospitals to adopt job rotation in their systems and operations?

The previously mentioned research questions address the topic from different perspectives; they are directly interrelated in a way that allows collecting exact data.

3.3 Hypotheses

For the purpose of studying the effects of job rotation on employees, especially on nurses, and from the previously mentioned research questions, the hypotheses emerge. This study attempts to accept or to reject the following hypotheses:

Hypothesis 1: Job rotation enhances the competencies and performance of nurses.

Hypothesis 2: Job rotation increases the satisfaction of nurses.

Hypothesis 3: Job rotation is an effective training tool.

3.4 Selected variables

According to Donnelly and Trochim (2006), the independent variable is something that can be manipulated; however the dependent one is always affected by the independent variables. In this study, the variables are grouped into dependent and independent as follows:

- The dependent variable is job rotation.
- The independent variables are: competencies & performance, satisfaction and training.

3.5 Methodology

Here is the most critical part since the used techniques for data collection have the largest impact on the accuracy and validity of findings (Bradley and Harrel, 2009). It is very essential to select the ultimate strategies in order to bring exact results for a reliable research. Within this specific study, the survey is found to be the best strategy that fits the topic; it is considered as the umbrella under which all data will fall. The study follows a purely analytical, descriptive approach where hypotheses are tested for the purpose of finding quantified results concerning the effects of job rotation.

The whole framework and procedures of this research are summarized in the figure below:

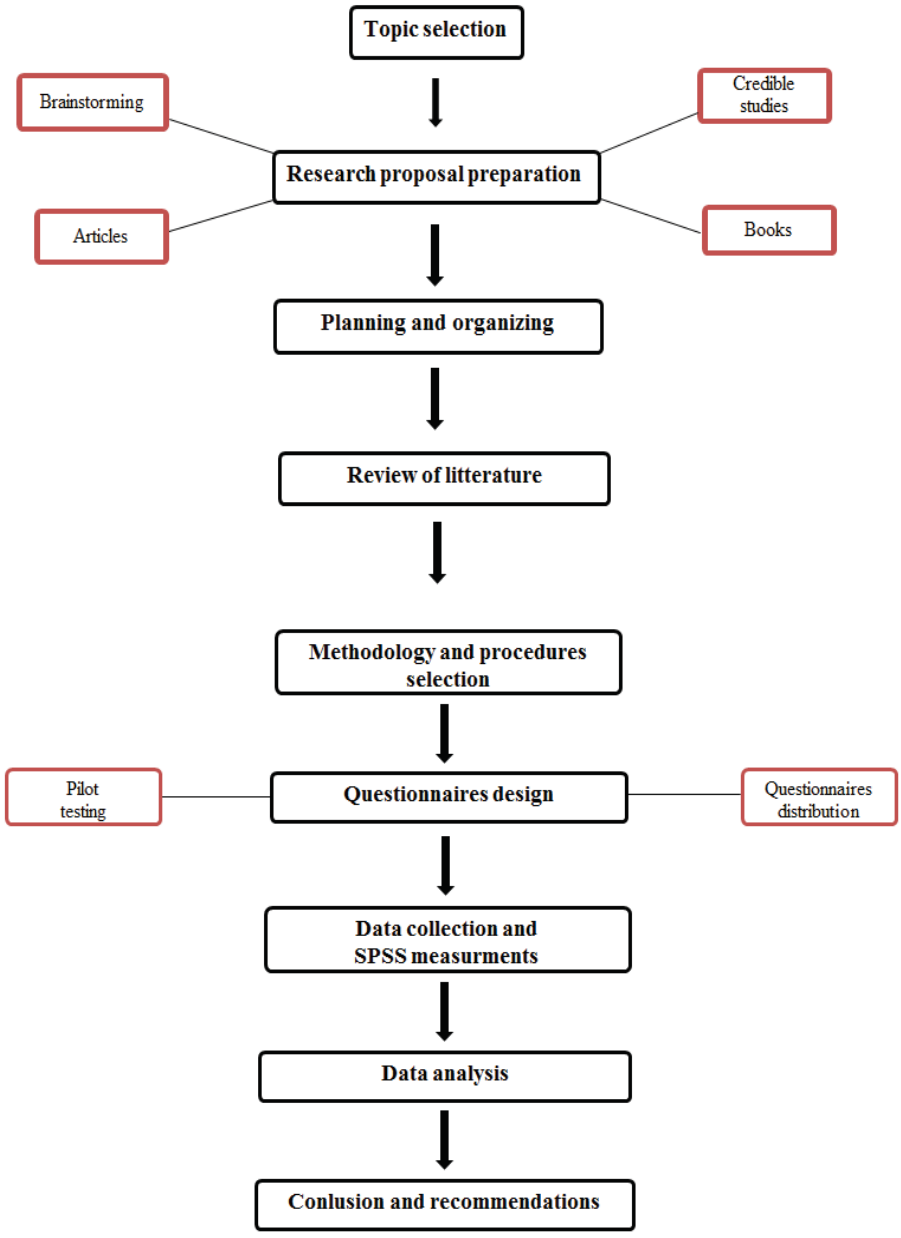

Figure 6: Framework of the study

3.5.1 Philosophical dimension

According to Menassa (2016), three main schools are in place when it comes to the philosophical dimensions:

- Positivism is the school of thoughts believing that everything can be justified through the tools of natural sciences, it is highly inclined toward objectivity, its supporters believe in linear causality and seek to generalize their findings in all times and spaces. Menassa (2016) stated that relative to positivists, relying on measurements and experiences is a must to obtain meaningful results.
- Post-positivism is much more related to reality. This philosophy seeks objectivity even though it may not be fully achieved since post-positivists believe that the knowledge and values of the researcher have an influence on the study. Moreover, post-positivists are known for relying on diverse data collection tools (triangulation method) for an improved understanding (Menassa, 2016).
- Phenomenology, it studies people in their natural context (socially based) and it is characterized by a high level of subjectivity where people are studied in their natural context (Menassa, 2016).
- Concerning this research, positivism is found to be the most appropriate approach since it is deductive in nature and data are collected via questionnaires (quantitative results and analysis). A regression analysis is performed using SPSS program in order to analyze the obtained results.

3.5.2 Reasoning approach

Choosing the appropriate reasoning approach to be followed is crucial when it comes to conducting any research. It works as a light that guides researcher's logic and thoughts. Donnelly and Trochim (2006) identified two main reasoning approaches:

- Deductive reasoning or top-down approach takes place when the researcher starts from a certain theory then tries to test some hypotheses in order to confirm the initial theory at the end.
- Inductive approach or bottom-up approach where the researcher aims at coming up with a new theory or a different way of thinking through creating testing new hypotheses.

Since this study is based on hypotheses testing, and since studying the effects of job rotation in many fields is already done before by many researchers, the current research should be deductive in nature. The proposed hypotheses will be well-tested in order to confirm the initial theory concerning the positive impact of job rotation on nurses' competencies & performance, on their satisfaction and on training as well. The analysis is based on qualitative data captured through questionnaires and interpreted through SPSS.

3.5.3 Sources of data

For any research, there are numerous methods to gather information that fall under two main categories: primary source of data and secondary source of data (Douglas, 2015). In this specific case, primary sources were used since data was acquired through distributing questionnaires on the nurses of three hospitals at North Lebanon in order to come up with quantified results concerning the effects of job rotation on performance, satisfaction and training.

3.5.4 Data collection tool

The required data was collected through the distribution of questionnaires; the majority of the questions were created by the researcher with the support of "Minnesota Satisfaction Questionnaire" as a reference. It started by a

paragraph explaining its content and aims, in addition to full confidentiality in order to secure the highest response rate with maximum honesty and transparency. The questionnaire was divided into two main parts. The first one was related to demographics (gender, age, level of education, and seniority at work …), then the second part was made of 25 questions organized through a five-point Likert scale addressing the concept of job rotation from different sides. This section aims at collecting the sufficient data needed for measuring quantitatively the impact of job rotation on performance, satisfaction and training as well.

3.5.5 Population and sample

The targeted population needed to accomplish this study consisted of nurses who were or who are currently enrolled at job rotation programs. The focus was on three well-known hospitals located at North Lebanon, in three different geographic areas (Tripoli, Al Koura and Zgharta). A random sample of 140 participants was selected, 140 questionnaires were distributed, among nurses, out of which 106 were received at the end. For clarification, all the respondents were nurses having different positions at different departments. The distribution was as follows:

- Borji Hospital: 22 responses, representing 20.75% of the tested sample.
- Nini Hospital: 33 responses, representing 31.13% of the tested sample.
- FMC: 51 responses, representing 48.12% of the tested sample.

3.5.6 Pilot test

Prior to questionnaires' distribution phase, a simple pilot study was conducted to make sure that all questions are clear and accurate enough. Around 20 questionnaires were

distributed randomly among individuals working in different fields in order to identify the gaps (if any) and to find out whether there is any wording problem.

3.6 Conclusion

In this chapter the required procedures are presented in details, it gives more information about the nature of the study and how the topic will be treated and most importantly it clarifies the tools needed to test the derived hypotheses. Moreover, it is the part that determines the tangible steps taken into consideration for the purpose of coming up with the proper results.

Chapter 4

4. Findings

4.1 Introduction

In this chapter, the findings are clearly elaborated in order to come up with the right conclusions regarding the rejection or not of hypotheses. The methods and framework elaborated within the methodology shaped up the convenient path helping us to come up with the proper findings.

4.2 Analysis framework

This section illustrates central tendencies and the kind of tests used to serve the quantitative methodology of this study. The gathered data from the survey were interpreted using SPSS, we agreed that in addition to descriptive statistics, linear regression, Mann-Whitney test and Spearman Rho test are the most appropriate to come up with the needed information.

The followed framework is illustrated in the figure below:

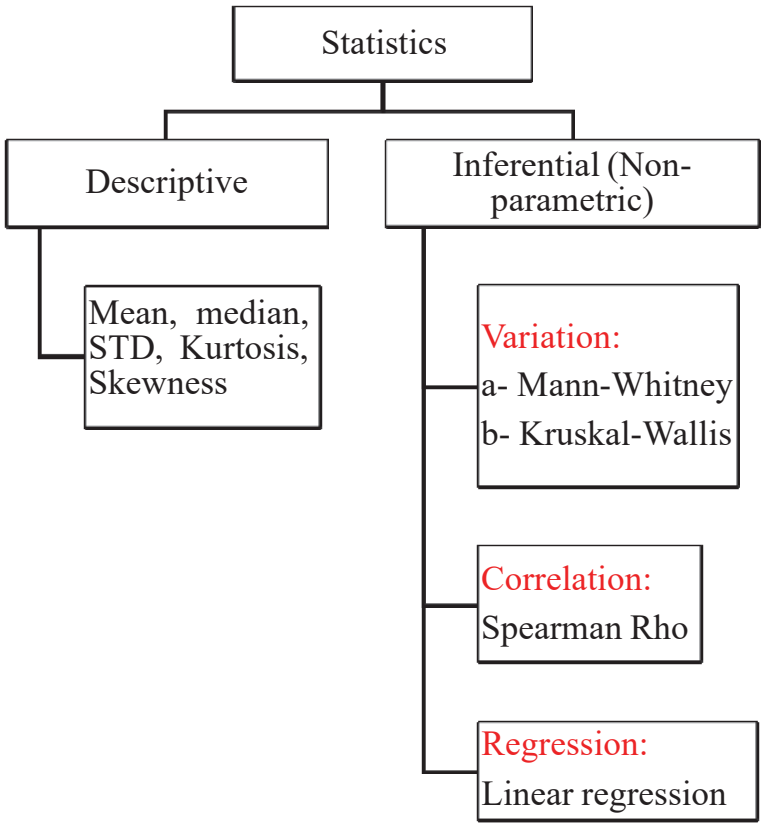

Figure 7: Quantitative analysis framework

4.2.1 Descriptive statistics

In the section below, descriptive statistics are presented which helped us in finding out the variation of nurses' perceptions concerning the effects of job rotation. We included central tendencies and dispersions: mean, standard deviation, median, min, max in addition to kurtosis and skewness.

4.2.1.1 Gender of respondents

From the 106 usable samples, 62 were female (58%) and the remaining 44 (42%) were males.

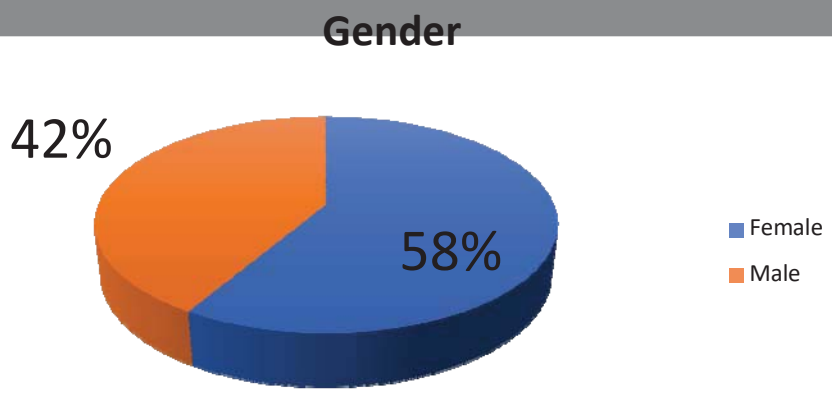

Figure 8: Gender's distribution of the respondents

4.2.1.2 Age of the respondents

The research included nurses from different age groups; the latter enriches the study more and more since the obtained data will be diversified enough to obtain accurate results at the end. Respondents aging between 19 and 24 had the lowest percentage (4.72%) from the overall number of respondents. The largest proportion is from 25 to 30 years old (49.06%) which indicates that the work was done with mature individuals. The percentage is also high for nurses from 31 to 36 (24.53%) and above 37 (21.70%) which is a strong point because at this age they may have been subject to several rotations and surely they have experienced its effects.

Age groups	Frequency	Percentage

From 19 to 24	5	4.72%
From 25 to 30	52	49.05%
From 31 to 36	26	24.53%
37 and above	23	21.70%
Total	106	100.00%

Table 1: Age distribution of the respondents

4.2.1.3 Level of education

We remarked that respondents are from different educational backgrounds, which serves the diversity needed for the research. 44.33% of respondents have technical certificate (BT3, TS, LT, License Academique, DV), 26.42% have a bachelor degree, whereas 29.25% have master degree. The highest percentage of respondents is for nurses with technical certificates (44.33%).

Level of education	Frequency	Percentage
BT3	1	0.94%
TS	12	11.32%
LT	13	12.26%
License Academique	11	10.38%
DV	10	9.43%
BS	28	26.42%
Masters	31	29.25%
Total	106	100.00%

Table 2: Education level of respondents

4.2.1.4 Job title

38.68% of respondents are nurses which represent the highest percentage among all positions, 23.58% are head nurses, 7.55% are cadre nurses and the same percentage is observed for aide-soignantes, 6.06% are HOD, 7.55% are intensive care nurses, 4.72% are internal division responsible, 1.89% are bed management responsible and the same percentage is found for continuous training responsible.

Job title	Frequency	Percentage
Nurse	41	38.68%
Head nurse	25	23.58%
Cadre nurse	8	7.55%
Aide-soignante	8	7.55%
HOD	7	6.60%
Intensive care	8	7.55%
Internal Division Responsible	5	4.71%
Bed Management Responsible	2	1.89%
Continuous Training Responsible	2	1.89%
Total	106	100.00%

Table 3: Job titles of respondents

4.2.1.5 Seniority at the hospital

It is obvious that the highest percentage of respondents have a working period between 1 and 5 years (66.04%), 27.36% have a working period between 6 and 10 years, 2.83% with a working period between 11 and 15 years and 3.77% with a working period of 16 years and more.

Seniority (years)	Frequency	Percentage
From 1 to 5	70	66.04%
From 6 to 10	29	27.36%
From 11 to 15	3	2.83%
16 and more	4	3.77%
Total	106	100.00%

Table 4: Respondents' seniority at the hospital

As illustrated in the table below, all the respondents were subject to job rotation at least 1 time. The majority has rotated 2 times with a percentage of 41.51%.

Number of rotations	Frequency	Percentage
1	15	14.15%
2	44	41.51%
3	31	29.25%
4	10	9.43%
5	5	4.72%
6	1	0.94%
Total	106	100.00%

Table 5: Respondents' number of rotations

4.2.2 Inferential statistics

4.2.2.1 Regression analysis

We relied on regression to check for causality and for the relationship between the dependent and independent variables [Y=a+bx]; where the regression (Y) is that job rotation is a function of various factors (x). (a) is a constant and (b) is the weight.

6	(Constant)	.385	.409		.942	.349
	You feel comfortable and enthusiastic during the rotation process	.199	.077	.229	2.596	.011
	Job rotation increases self-confidence level	.213	.064	.231	3.307	.001
	Job rotation is considered an effective way for a healthy change	.217	.087	.221	2.496	.014
	Job rotation is an effective training tool	.244	.088	.196	2.787	.006
	Age of respondents (years)	-.154	.056	-.169	-2.741	.007
	Job rotation improves planning and organizing skills	.161	.070	.160	2.283	.025

Table 6: Coefficients model (SPSS)

In order to check for regression we used the stepwise test and we had the following regression formula:

$$Y = 0.385 + 0.199*\text{comfort} + 0.213*\text{self-confidence} + 0.217*\text{healthy change} + 0.244*\text{effective training tool} - 0.154*\text{age of respondents} + 0.161*\text{planning skills}$$

From this formula we can remark that all the predictors are positively related with the dependent variable Y (Job Rotation), unless the age of respondents which has a negative impact on job rotation, with a negative coefficient of – 0.154. The latter means that whenever age increases by 1, job rotation will decrease by 0.154.

R square shows how much variance in the dependent variable can be described by the independent variable. According to the regression model summary: R square= 67.2% which indicates that 67.2% of variation in job rotation is explained by the model and the independent variables account for 67.2% of the variability in the dependent variable.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.669[a]	.448	.442	.59681
2	.748[b]	.560	.552	.53513
3	.781[c]	.610	.599	.50618
4	.798[d]	.637	.622	.49122
5	.809[e]	.655	.637	.48133
6	.820[f]	.672	.652	.47150

Table 7: Model summary (SPSS)

4.2.2.2 Correlation analysis

For correlation analysis, we decided to use Spearman's rho in order to deal with non-parametric correlation's analysis. Each variable is tested solely with its related attributes for the purpose of finding out the extent to which they are correlated together or significant to each other.

First, Spearman's rho test is conducted between job rotation and all the attributes of performance, the results are shown in **Appendix B**.

A positive correlation is remarked between considering job rotation as an effective step at the hospital and all the attributes of performance. A positive correlation is found between the impact of job rotation on helping employees in understanding organizational goals and employees' experience (0.551), productivity development (0.523), job fit's identification (0.420), enhancement of planning skills (0.466) and the development of a multi-skilled employee (0.398).

Moreover, it is obvious that there is a statistically significant correlation between the ability of job rotation to improve the overall performance and all the attributes related to performance: employees' experience (0.497), employees' productivity (0.582), the development of planning

skills (0.463), the improvement of know-how through job rotation (0.419) and the creation of a multi-skilled member (0.459).

Second, Spearman's rho test is conducted between job rotation and all the attributes of satisfaction, the results are shown in **Appendix C**.

A positive and significant correlation is obtained between considering the adoption of job rotation as an effective step and all the attributes of satisfaction including: rendering employees more enthusiastic (0.510), allowing employees to satisfy their sense of achievement (0.492), the impact of high morale in improving the whole performance (0.479), increasing self-confidence level (0.501), decreasing boredom levels (0.498) and reducing employees' turnover (0.456).

The statistically significant correlation is also maintained between the positive impact of job rotation on increasing satisfaction and its attributes such as rendering employees more enthusiastic (0.399), allowing employees to satisfy their sense of achievement (0.526) and increasing self-confidence level (0.374) …

Third, Spearman's rho test is conducted between job rotation and all the attributes of training, the results are shown in **Appendix D**.

A positive correlation is remarked between the effectiveness of adopting job rotation at the hospital and employees' enhancement through training and development (0.482), the consideration of job rotation as an effective training tool (0.545), job rotation's ability to create a well-equipped employee (0.593), the positive attitude gained through training & development (0.426) and the consideration of job rotation as a smart way to secure the best training program (0.553).

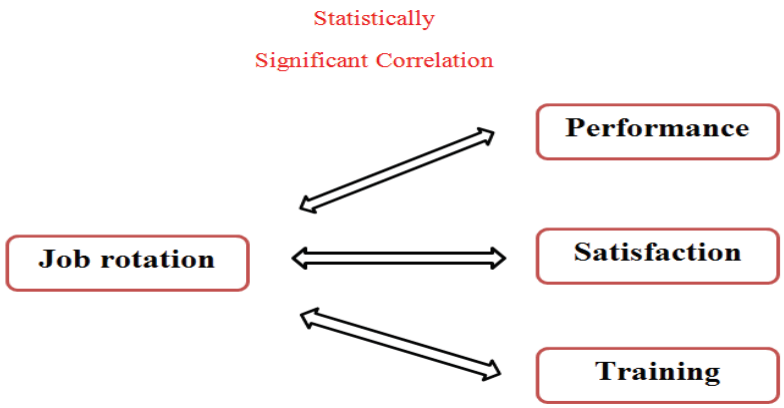

Figure 9: Spearman Rho result summary

To conclude, Spearman's rho correlation showed a statistically significant correlation between job rotation and all the attributes related to each variable (performance, satisfaction and training).

4.2.2.3 Variance analysis

Concerning variance analysis, we decided to use non-parametric tests to proceed: Mann-Whitney test known as U-test and Kruskal-Wallis test known as K-test.

Regarding Kruskal-Wallis test, we relied on the variables used in the hypotheses: job rotation, competencies & performance, satisfaction and training. In order to check whether the hypotheses are accepted or not, the attributes related to the previously mentioned variables were tested against each other relative to gender, age, level of education, working period at the hospital and number of rotations.

Hypothesis 1: Job rotation enhances the competencies and performance of nurses.

Job rotation was tested against all the attributes of competencies and performance relative to gender, age, level of education, working period at the hospital and number of rotations. The following are the results.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.111	Retain the null hypothesis.
2	The distribution of Job rotation helps employees in understanding organizational goals is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.094	Retain the null hypothesis.
3	The distribution of Productivity increases due to the enhanced competency of employees is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
4	The distribution of Job rotation has a positive impact on employees' experience is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.174	Retain the null hypothesis.
5	The distribution of Job rotation improves the overall performance is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.290	Retain the null hypothesis.
6	The distribution of Job rotation helps in identifying the best job fit is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.011	Reject the null hypothesis.
7	The distribution of Job rotation improves planning and organizing skills is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.292	Retain the null hypothesis.
8	The distribution of Employees' know-how is developed through job rotation is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.009	Reject the null hypothesis.
9	The distribution of Job rotation is a way to develop a multi-skilled member is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.137	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 8: Gender with competencies and performance attributes

In this table, the Kruskal-Wallis test shows that in this hypothesis 3 out of 9 attributes were rejected since the significance level was less than 0.05. For further testing, we used Mann-Whitney test for each rejected attribute. After the test, all 3 attributes failed to reject since their

significance level was below 0.05. According to the results of Mann-Whitney test, we claim that there is no variation in opinion between competencies and performance attributes and gender.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Job rotation helps employees in understanding organizational goals is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.989	Retain the null hypothesis.
3	The distribution of Productivity increases due to the enhanced competency of employees is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.137	Retain the null hypothesis.
4	The distribution of Job rotation has a positive impact on employees' experience is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.431	Retain the null hypothesis.
5	The distribution of Job rotation improves the overall performance is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.080	Retain the null hypothesis.
6	The distribution of Job rotation helps in identifying the best job fit is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.079	Retain the null hypothesis.
7	The distribution of Job rotation improves planning and organizing skills is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.359	Retain the null hypothesis.
8	The distribution of Employees' know-how is developed through job rotation is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.033	Reject the null hypothesis.
9	The distribution of Job rotation is a way to develop a multi-skilled member is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.482	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 9: Age with competencies and performance attributes

In this table, the Kruskal-Wallis test shows that 2 out of 9 attributes were rejected since the significance level was below 0.05. We used Mann-Whitney test for further testing. After the test, attribute 1 partially failed to reject and attribute 8 was rejected since the majority of significance level was higher than 0.05. The results are showed in the tables below:

Attribute 1 showed a variation between age groups 1& 2 with a positive significance level of 0.074.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	75.000
Wilcoxon W	1453.000
Z	-1.785
Asymp. Sig. (2-tailed)	.074
Exact Sig. [2*(1-tailed Sig.)]	.127[b]

Table 10: Mann-Whitney test for attribute 1 with age groups 1 & 2

Attribute 1 showed a variation between age groups 2 & 3 with a positive significance level of 0.925.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	668.000
Wilcoxon W	1019.000
Z	-.095
Asymp. Sig. (2-tailed)	.925

Table 11: Mann-Whitney test for attribute 1 with age groups 2 & 3

Attribute 8 showed a variation between age groups 1 & 2 with a positive significance level of 0.375.

	Employees' know-how is developed through job rotation
Mann-Whitney U	102.000
Wilcoxon W	1480.000
Z	-.886
Asymp. Sig. (2-tailed)	.375
Exact Sig. [2*(1-tailed Sig.)]	.449[b]

Table 12: Mann-Whitney test for attribute 8 with age groups 1 & 2

Attribute 8 showed a variation between age groups 1 & 3 with a positive significance level of 0.286.

	Employees' know-how is developed through job rotation
Mann-Whitney U	47.000
Wilcoxon W	398.000
Z	-1.068
Asymp. Sig. (2-tailed)	.286
Exact Sig. [2*(1-tailed Sig.)]	.358[b]

Table 13: Mann-Whitney test for attribute 8 with age groups 1 & 3

Attribute 8 showed a variation between age groups 2 & 3 with a positive significance level of 0.557.

	Employees' know-how is developed through job rotation
Mann-Whitney U	625.500
Wilcoxon W	976.500
Z	-.588
Asymp. Sig. (2-tailed)	.557

Table 14: Mann-Whitney test for attribute 8 with age groups 2 & 3

Attribute 8 showed a variation between age groups 3 & 4 with a positive significance level of 0.110.

	Employees' know-how is developed through job rotation
Mann-Whitney U	224.000
Wilcoxon W	500.000
Z	-1.596
Asymp. Sig. (2-tailed)	.110

Table 15: Mann-Whitney test for attribute 8 with age groups 3 & 4

From these results we can claim that there is a variation in opinions regarding "employees' know-how is developed through job rotation" with age groups.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.063	Retain the null hypothesis.
2	The distribution of Job rotation helps employees in understanding organizational goals is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.213	Retain the null hypothesis.
3	The distribution of Productivity increases due to the enhanced competency of employees is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.120	Retain the null hypothesis.
4	The distribution of Job rotation has a positive impact on employees' experience is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.259	Retain the null hypothesis.
5	The distribution of Job rotation improves the overall performance is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.055	Retain the null hypothesis.
6	The distribution of Job rotation helps in identifying the best job fit is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.599	Retain the null hypothesis.
7	The distribution of Job rotation improves planning and organizing skills is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.437	Retain the null hypothesis.
8	The distribution of Employees' know-how is developed through job rotation is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.032	Reject the null hypothesis.
9	The distribution of Job rotation is a way to develop a multi-skilled member is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 16: Level of education with competencies and performance attributes

In this table, the Kruskal-Wallis test shows that 2 attributes out of 9 were rejected since their significance level was below 0.05. We used Mann-Whitney for further testing. After the test, attribute 8 and 9 were rejected since the significance level with the majority of groups was very high. Some of the results are showed in the tables below:

Attribute 8 showed a variation in opinion between level of education groups 1 & 3 with a positive significance level of 0.468.

	Employees' know-how is developed through job rotation
Mann-Whitney U	4.000
Wilcoxon W	95.000
Z	-.725
Asymp. Sig. (2-tailed)	.468
Exact Sig. [2*(1-tailed Sig.)]	.714[b]

Table 17: Mann-Whitney test for attribute 8 with level of education groups 1 & 3

Attribute 8 showed a variation in opinion between level of education groups 1 & 4 with a positive significance level of 0.567.

	Employees' know-how is developed through job rotation
Mann-Whitney U	4.000
Wilcoxon W	70.000
Z	-.572
Asymp. Sig. (2-tailed)	.567
Exact Sig. [2*(1-tailed Sig.)]	.833[b]

Table 18: Mann-Whitney test for attribute 8 with level of education groups 1 & 4

Attribute 8 showed a variation in opinion between level of education groups 1 & 6 with a positive significance level of 0.209.

	Employees' know-how is developed through job rotation
Mann-Whitney U	4.000
Wilcoxon W	410.000
Z	-1.255
Asymp. Sig. (2-tailed)	.209
Exact Sig. [2*(1-tailed Sig.)]	.345[b]

Table 19: Mann-Whitney test for attribute 8 with level of education groups 1 & 6

Attribute 8 showed a variation in opinion between level of education groups 5 & 6 with a positive significance level of 0.699.

	Employees' know-how is developed through job rotation
Mann-Whitney U	129.000
Wilcoxon W	184.000
Z	-.387
Asymp. Sig. (2-tailed)	.699
Exact Sig. [2*(1-tailed Sig.)]	.732[b]

Table 20: Mann-Whitney test for attribute 8 with level of education groups 5 & 6

Attribute 9 showed a variation in opinion between level of education groups 1 & 2 with a positive significance level of 0.505.

	Job rotation is a way to develop a multi-skilled member
Mann-Whitney U	4.000
Wilcoxon W	82.000
Z	-.667
Asymp. Sig. (2-tailed)	.505
Exact Sig. [2*(1-tailed Sig.)]	.769[b]

Table 21: Mann-Whitney test for attribute 9 with level of education groups 1 & 2

Attribute 9 showed a variation in opinion between level of education groups 1 & 4 with a positive significance level of 0.763.

	Job rotation is a way to develop a multi-skilled member
Mann-Whitney U	5.000
Wilcoxon W	71.000
Z	-.302
Asymp. Sig. (2-tailed)	.763
Exact Sig. [2*(1-tailed Sig.)]	1.000[b]

Table 22: Mann-Whitney test for attribute 9 with level of education groups 1 & 4

Attribute 9 showed a variation in opinion between level of education groups 1 & 7 with a positive significance level of 0.439.

	Job rotation is a way to develop a multi-skilled member
Mann-Whitney U	9.500
Wilcoxon W	505.500
Z	-.775
Asymp. Sig. (2-tailed)	.439
Exact Sig. [2*(1-tailed Sig.)]	.625[b]

Table 23: Mann-Whitney test for attribute 9 with level of education groups 1 & 7

Attribute 9 showed a variation in opinion between level of education groups 3 & 5 with a positive significance level of 0.674.

	Job rotation is a way to develop a multi-skilled member
Mann-Whitney U	59.000
Wilcoxon W	114.000
Z	-.421
Asymp. Sig. (2-tailed)	.674
Exact Sig. [2*(1-tailed Sig.)]	.738[b]

Table 24: Mann-Whitney test for attribute 9 with level of education groups 3 & 5

Attribute 9 showed a variation in opinion between level of education groups 5 & 6 with a positive significance level of 0.250.

	Job rotation is a way to develop a multi-skilled member
Mann-Whitney U	109.000
Wilcoxon W	515.000
Z	-1.149
Asymp. Sig. (2-tailed)	.250
Exact Sig. [2*(1-tailed Sig.)]	.317[b]

Table 25: Mann-Whitney test for attribute 9 with level of education groups 5 & 6

From the obtained results we can claim that there is a variation in opinion concerning the effect of job rotation on improving employees' know-how and its effect on developing a multi-skilled member with the level of education.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.082	Retain the null hypothesis.
2	The distribution of Job rotation helps employees in understanding organizational goals is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.399	Retain the null hypothesis.
3	The distribution of Productivity increases due to the enhanced competency of employees is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.452	Retain the null hypothesis.
4	The distribution of Job rotation has a positive impact on employees' experience is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.366	Retain the null hypothesis.
5	The distribution of Job rotation improves the overall performance is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.553	Retain the null hypothesis.
6	The distribution of Job rotation helps in identifying the best job fit is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.319	Retain the null hypothesis.
7	The distribution of Job rotation improves planning and organizing skills is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.065	Retain the null hypothesis.
8	The distribution of Employees' know-how is developed through job rotation is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.215	Retain the null hypothesis.
9	The distribution of Job rotation is a way to develop a multi-skilled member is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.625	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 26: Working period with competencies and performance attributes

The Kruskal-Wallis test in this table shows that all the 9 attributes failed to reject since their significance level was above 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.441	Retain the null hypothesis.
2	The distribution of Job rotation helps employees in understanding organizational goals is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.409	Retain the null hypothesis.
3	The distribution of Productivity increases due to the enhanced competency of employees is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.543	Retain the null hypothesis.
4	The distribution of Job rotation has a positive impact on employees' experience is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.404	Retain the null hypothesis.
5	The distribution of Job rotation improves the overall performance is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.348	Retain the null hypothesis.
6	The distribution of Job rotation helps in identifying the best job fit is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.307	Retain the null hypothesis.
7	The distribution of Job rotation improves planning and organizing skills is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.561	Retain the null hypothesis.
8	The distribution of Employees' know-how is developed through job rotation is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.783	Retain the null hypothesis.
9	The distribution of Job rotation is a way to develop a multi-skilled member is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.201	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 27: Number of rotations with competencies and performance

This table shows that Kruskal-Wallis test resulted in a failure to reject all 9 attributes of competencies and performance since they have a significance level greater than 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

Hypothesis 2: Job rotation increases the satisfaction of nurses.

Job rotation was tested against all the attributes of satisfaction relative to gender, age, level of education, working period at the hospital and number of rotations. The following are the results.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.111	Retain the null hypothesis.
2	The distribution of Job rotation renders employees more enthusiastic is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.510	Retain the null hypothesis.
3	The distribution of Job rotation allows employees to satisfy their sense of achievement is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.098	Retain the null hypothesis.
4	The distribution of High morale employees give a better performance is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
5	The distribution of Job rotation increases self-confidence level is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.086	Retain the null hypothesis.
6	The distribution of Job rotation decreases boredom levels is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.380	Retain the null hypothesis.
7	The distribution of Job rotation reduces employees' turnover is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.049	Reject the null hypothesis.
8	The distribution of Job rotation is good for satisfaction as a whole is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.099	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 28: Gender with satisfaction attributes

In this table, Kruskal-Wallis shows that 2 out of 8 satisfaction's attributes were rejected since they have a significance level lower than 0.05. We used Mann-Whitney for further testing. After the test, attribute 4 and 7 failed to reject since their significance level was below 0.05. In this case we claim that there is no variation in opinion between attribute 4 and 7 with gender.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Job rotation renders employees more enthusiastic is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.006	Reject the null hypothesis.
3	The distribution of Job rotation allows employees to satisfy their sense of achievement is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.046	Reject the null hypothesis.
4	The distribution of High morale employees give a better performance is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.064	Retain the null hypothesis.
5	The distribution of Job rotation increases self-confidence level is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.211	Retain the null hypothesis.
6	The distribution of Job rotation decreases boredom levels is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.078	Retain the null hypothesis.
7	The distribution of Job rotation reduces employees' turnover is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.351	Retain the null hypothesis.
8	The distribution of Job rotation is good for satisfaction as a whole is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.195	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 29: Age with satisfaction attributes

In this table, the Kruskal-Wallis test shows that 3 out of 8 attributes were rejected since their significance level is below 0.05. We used Mann-Whitney for further testing. After the test, attribute 1 and 2, partially failed to reject since only few items had a high significance level. However, attribute 3 was rejected since the majority of significance levels were above 0.05. The results are showed in the tables below:

Attribute 1 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.074.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	75.000
Wilcoxon W	1453.000
Z	-1.785
Asymp. Sig. (2-tailed)	.074
Exact Sig. [2*(1-tailed Sig.)]	.127[b]

Table 30: Mann-Whitney test for attribute 1 with age groups 1 & 2

Attribute 1 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.925.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	668.000
Wilcoxon W	1019.000
Z	-.095
Asymp. Sig. (2-tailed)	.925

Table 31: Mann-Whitney test for attribute 1 with age groups 2 & 3

Attribute 2 showed a slight variation in opinion between age groups 1 & 2 with a positive significance level of 0.054.

	Job rotation renders employees more enthusiastic
Mann-Whitney U	69.500
Wilcoxon W	1447.500
Z	-1.923
Asymp. Sig. (2-tailed)	.054
Exact Sig. [2*(1-tailed Sig.)]	.088[b]

Table 32: Mann-Whitney test for attribute 2 with age groups 1 & 2

Attribute 2 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.100.

	Job rotation renders employees more enthusiastic
Mann-Whitney U	36.500
Wilcoxon W	387.500
Z	-1.647
Asymp. Sig. (2-tailed)	.100
Exact Sig. [2*(1-tailed Sig.)]	.129[b]

Table 33: Mann-Whitney test for attribute 2 with age groups 1 & 3

Attribute 2 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.944.

	Job rotation renders employees more enthusiastic
Mann-Whitney U	670.000
Wilcoxon W	1021.000
Z	-.071
Asymp. Sig. (2-tailed)	.944

Table 34: Mann-Whitney test for attribute 2 with age groups 2 & 3

Attribute 3 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.698.

	Job rotation allows employees to satisfy their sense of achievement
Mann-Whitney U	117.500
Wilcoxon W	132.500
Z	-.389
Asymp. Sig. (2-tailed)	.698
Exact Sig. [2*(1-tailed Sig.)]	.732[b]

Table 35: Mann-Whitney test for attribute 3 with age groups 1 & 2

Attribute 3 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.820.

	Job rotation allows employees to satisfy their sense of achievement
Mann-Whitney U	61.000
Wilcoxon W	412.000
Z	-.228
Asymp. Sig. (2-tailed)	.820
Exact Sig. [2*(1-tailed Sig.)]	.856[b]

Table 36: Mann-Whitney test for attribute 3 with age groups 1 & 3

Attribute 3 showed a variation in opinion between age groups 1 & 4 with a positive significance level of 0.147.

	Job rotation allows employees to satisfy their sense of achievement
Mann-Whitney U	35.500
Wilcoxon W	311.500
Z	-1.450
Asymp. Sig. (2-tailed)	.147
Exact Sig. [2*(1-tailed Sig.)]	.193[b]

Table 37: Mann-Whitney test for attribute 3 with age groups 1 & 4

Attribute 3 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.383.

	Job rotation allows employees to satisfy their sense of achievement
Mann-Whitney U	599.500
Wilcoxon W	950.500
Z	-.872
Asymp. Sig. (2-tailed)	.383

Table 38: Mann-Whitney test for attribute 3 with age groups 2 & 3

Attribute 3 showed a variation in opinion between age groups 3 & 4 with a positive significance level of 0.131.

	Job rotation allows employees to satisfy their sense of achievement
Mann-Whitney U	227.500
Wilcoxon W	503.500
Z	-1.510
Asymp. Sig. (2-tailed)	.131

Table 39: Mann-Whitney test for attribute 3 with age groups 3 & 4

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.063	Retain the null hypothesis.
2	The distribution of Job rotation renders employees more enthusiastic is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.182	Retain the null hypothesis.
3	The distribution of Job rotation allows employees to satisfy their sense of achievement is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.087	Retain the null hypothesis.
4	The distribution of High morale employees give a better performance is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.034	Reject the null hypothesis.
5	The distribution of Job rotation increases self-confidence level is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.199	Retain the null hypothesis.
6	The distribution of Job rotation decreases boredom levels is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.021	Reject the null hypothesis.
7	The distribution of Job rotation reduces employees' turnover is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.066	Retain the null hypothesis.
8	The distribution of Job rotation is good for satisfaction as a whole is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.120	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 40: Level of education with satisfaction attributes

In this table, the Kruskal-Wallis test shows that 2 out of 8 attributes were rejected since their significance level is below 0.05. We used Mann-Whitney for further testing. After the test, attribute 4 and 6 were rejected since the majority of Mann-Whitney tests resulted in a high significance level. Some of the results are showed in the tables below:

Attribute 4 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.670.

	High morale employees give a better performance
Mann-Whitney U	5.000
Wilcoxon W	83.000
Z	-.426
Asymp. Sig. (2-tailed)	.670
Exact Sig. [2*(1-tailed Sig.)]	.923[b]

Table 41: Mann-Whitney test for attribute 4 with level of education groups 1 & 2

Attribute 4 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.604.

	High morale employees give a better performance
Mann-Whitney U	5.000
Wilcoxon W	96.000
Z	-.519
Asymp. Sig. (2-tailed)	.604
Exact Sig. [2*(1-tailed Sig.)]	.857[b]

Table 42: Mann-Whitney test for attribute 4 with level of education groups 1 & 3

Attribute 6 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.163.

	Job rotation decreases boredom levels
Mann-Whitney U	1.500
Wilcoxon W	79.500
Z	-1.396
Asymp. Sig. (2-tailed)	.163
Exact Sig. [2*(1-tailed Sig.)]	.308[b]

Table 43: Mann-Whitney test for attribute 6 with level of education groups 1 & 2

Attribute 6 showed a variation in opinion between age groups 2 & 4 with a positive significance level of 0.121.

	Job rotation decreases boredom levels
Mann-Whitney U	44.000
Wilcoxon W	122.000
Z	-1.552
Asymp. Sig. (2-tailed)	.121
Exact Sig. [2*(1-tailed Sig.)]	.190[b]

Table 44: Mann-Whitney test for attribute 6 with level of education groups 2 & 4

Attribute 6 showed a variation in opinion between age groups 5 & 6 with a positive significance level of 0.929.

	Job rotation decreases boredom levels
Mann-Whitney U	137.500
Wilcoxon W	192.500
Z	-.089
Asymp. Sig. (2-tailed)	.929
Exact Sig. [2*(1-tailed Sig.)]	.935[b]

Table 45: Mann-Whitney test for attribute 6 with level of education groups 5 & 6

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.082	Retain the null hypothesis.
2	The distribution of Job rotation renders employees more enthusiastic is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.307	Retain the null hypothesis.
3	The distribution of Job rotation allows employees to satisfy their sense of achievement is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.197	Retain the null hypothesis.
4	The distribution of High morale employees give a better performance is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.176	Retain the null hypothesis.
5	The distribution of Job rotation increases self-confidence level is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.741	Retain the null hypothesis.
6	The distribution of Job rotation decreases boredom levels is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.308	Retain the null hypothesis.
7	The distribution of Job rotation reduces employees' turnover is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.469	Retain the null hypothesis.
8	The distribution of Job rotation is good for satisfaction as a whole is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.471	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 46: Working period at the hospital with satisfaction attributes

In this table, the Kruskal-Wallis test shows that all the 8 attributes failed to reject since they possess a significance level above 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.441	Retain the null hypothesis.
2	The distribution of Job rotation renders employees more enthusiastic is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.313	Retain the null hypothesis.
3	The distribution of Job rotation allows employees to satisfy their sense of achievement is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.262	Retain the null hypothesis.
4	The distribution of High morale employees give a better performance is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.428	Retain the null hypothesis.
5	The distribution of Job rotation increases self-confidence level is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.123	Retain the null hypothesis.
6	The distribution of Job rotation decreases boredom levels is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.383	Retain the null hypothesis.
7	The distribution of Job rotation reduces employees' turnover is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.270	Retain the null hypothesis.
8	The distribution of Job rotation is good for satisfaction as a whole is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.842	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 47: Number of rotations with satisfaction attributes

In this table, the Kruskal-Wallis test shows that all the attributes failed to reject since their significance level is greater than 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

Hypothesis 3: Job rotation is an effective training tool.

Job rotation was tested against all the attributes of training relative to gender, age, level of education, working period at the hospital and number of rotations. The following are the results.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.111	Retain the null hypothesis.
2	The distribution of Employees' enhancement comes through training and development is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.142	Retain the null hypothesis.
3	The distribution of Job rotation is an effective training tool is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.008	Reject the null hypothesis.
4	The distribution of Changing tasks contributes to creating a well-equipped employee is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.008	Reject the null hypothesis.
5	The distribution of Training and development brings positive attitudes on employees is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.015	Reject the null hypothesis.
6	The distribution of Job rotation is a smart way to guarantee the best training program is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
7	The distribution of Job rotation is considered an effective way for a healthy change is the same across categories of Gender.	Independent-Samples Kruskal-Wallis Test	.111	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 48: Gender with training attributes

In this table, the Kruskal-Wallis test shows that 4 out of 7 attributes were rejected since their significance level is below 0.05. We used Mann-Whitney for further testing. After the test,

attribute 3, 4, 5 and 6 failed to reject since their significance level were below 0.05. Therefore, there is no variation between these 4 attributes and gender.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of Employees' enhancement comes through training and development is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.094	Retain the null hypothesis.
3	The distribution of Job rotation is an effective training tool is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.379	Retain the null hypothesis.
4	The distribution of Changing tasks contributes to creating a well-equipped employee is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.274	Retain the null hypothesis.
5	The distribution of Training and development brings positive attitudes on employees is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.030	Reject the null hypothesis.
6	The distribution of Job rotation is a smart way to guarantee the best training program is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.023	Reject the null hypothesis.
7	The distribution of Job rotation is considered an effective way for a healthy change is the same across categories of Age (years).	Independent-Samples Kruskal-Wallis Test	.029	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 49: Age with training attributes

In this table, the Kruskal-Wallis test shows that 4 out of 7 attributes were rejected since they possess a significance level lower than 0.05. We used Mann-Whitney for further testing. After

the test, attributes 1 and 5 partially failed to reject, however attributes 6 and 7 were rejected since their significance level was very high. Variation exists between attribute 6 and 7 with the majority of age groups. The results are showed in the tables below:

Attribute 1 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.074.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	75.000
Wilcoxon W	1453.000
Z	-1.785
Asymp. Sig. (2-tailed)	.074
Exact Sig. [2*(1-tailed Sig.)]	.127[b]

Table 50: Mann-Whitney test for attribute 1 with age groups 1 & 2

Attribute 1 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.925.

	Adopting job rotation at the hospital is an effective step so far
Mann-Whitney U	668.000
Wilcoxon W	1019.000
Z	-.095
Asymp. Sig. (2-tailed)	.925

Table 51: Mann-Whitney test for attribute 1 with age groups 2 & 3

Attribute 5 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.169.

	Training and development brings positive attitude on employees
Mann-Whitney U	42.500
Wilcoxon W	393.500
Z	-1.376
Asymp. Sig. (2-tailed)	.169
Exact Sig. [2*(1-tailed Sig.)]	.235[b]

Table 52: Mann-Whitney test for attribute 5 with age groups 1 & 3

Attribute 5 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.156.

	Training and development brings positive attitude on employees
Mann-Whitney U	556.000
Wilcoxon W	1934.000
Z	-1.419
Asymp. Sig. (2-tailed)	.156

Table 53: Mann-Whitney test for attribute 5 with age groups 2 & 3

Attribute 5 showed a variation in opinion between age groups 2 & 4 with a positive significance level of 0.149.

	Training and development brings positive attitude on employees
Mann-Whitney U	481.500
Wilcoxon W	757.500
Z	-1.441
Asymp. Sig. (2-tailed)	.149

Table 54: Mann-Whitney test for attribute 5 with age groups 2 & 4

Attribute 6 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.922.

	Job rotation is a smart way to guarantee the best training program
Mann-Whitney U	127.000
Wilcoxon W	1505.000
Z	-.098
Asymp. Sig. (2-tailed)	.922
Exact Sig. [2*(1-tailed Sig.)]	.946[b]

Table 55: Mann-Whitney test for attribute 6 with age groups 1 & 2

Attribute 6 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.335.

	Job rotation is a smart way to guarantee the best training program
Mann-Whitney U	48.500
Wilcoxon W	399.500
Z	-.963
Asymp. Sig. (2-tailed)	.335
Exact Sig. [2*(1-tailed Sig.)]	.387[b]

Table 56: Mann-Whitney test for attribute 6 with age groups 1 & 3

Attribute 6 showed a variation in opinion between age groups 1 & 4 with a positive significance level of 0.079.

	Job rotation is a smart way to guarantee the best training program
Mann-Whitney U	31.500
Wilcoxon W	307.500
Z	-1.757
Asymp. Sig. (2-tailed)	.079
Exact Sig. [2*(1-tailed Sig.)]	.121[b]

Table 57: Mann-Whitney test for attribute 6 with age groups 1 & 4

Attribute 6 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.097.

	Job rotation is a smart way to guarantee the best training program
Mann-Whitney U	536.000
Wilcoxon W	887.000
Z	-1.661
Asymp. Sig. (2-tailed)	.097

Table 58: Mann-Whitney test for attribute 6 with age groups 2 & 3

Attribute 6 showed a variation in opinion between age groups 3 & 4 with a positive significance level of 0.310.

	Job rotation is a smart way to guarantee the best training program
Mann-Whitney U	252.500
Wilcoxon W	528.500
Z	-1.015
Asymp. Sig. (2-tailed)	.310

Table 59: Mann-Whitney test for attribute 6 with age groups 3 & 4

Attribute 7 showed a variation in opinion between age groups 1 & 2 with a positive significance level of 0.086.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	74.000
Wilcoxon W	1452.000
Z	-1.715
Asymp. Sig. (2-tailed)	.086
Exact Sig. [2*(1-tailed Sig.)]	.120[b]

Table 60: Mann-Whitney test for attribute 7 with age groups 1 & 2

Attribute 7 showed a variation in opinion between age groups 1 & 3 with a positive significance level of 0.064.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	33.500
Wilcoxon W	384.500
Z	-1.854
Asymp. Sig. (2-tailed)	.064
Exact Sig. [2*(1-tailed Sig.)]	.091[b]

Table 61: Mann-Whitney test for attribute 7 with age groups 1 & 3

Attribute 7 showed a variation in opinion between age groups 2 & 3 with a positive significance level of 0.832.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	657.500
Wilcoxon W	1008.500
Z	-.213
Asymp. Sig. (2-tailed)	.832

Table 62: Mann-Whitney test for attribute 7 with age groups 2 & 3

Attribute 7 showed a variation in opinion between age groups 3 & 4 with a positive significance level of 0.070.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	215.500
Wilcoxon W	491.500
Z	-1.811
Asymp. Sig. (2-tailed)	.070

Table 63: Mann-Whitney test for attribute 7 with age groups 3 & 4

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.063	Retain the null hypothesis.
2	The distribution of Employees' enhancement comes through training and development is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.186	Retain the null hypothesis.
3	The distribution of Job rotation is an effective training tool is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.056	Retain the null hypothesis.
4	The distribution of Changing tasks contributes to creating a well-equipped employee is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.050	Retain the null hypothesis.
5	The distribution of Training and development brings positive attitudes on employees is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.185	Retain the null hypothesis.
6	The distribution of Job rotation is a smart way to guarantee the best training program is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.462	Retain the null hypothesis.
7	The distribution of Job rotation is considered an effective way for a healthy change is the same across categories of Level of education.	Independent-Samples Kruskal-Wallis Test	.079	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 64: Level of education with training attributes

In this table, the Kruskal-Wallis test shows that all the 7 attributes of training failed to reject since their significance level is higher than 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.082	Retain the null hypothesis.
2	The distribution of Employees' enhancement comes through training and development is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.665	Retain the null hypothesis.
3	The distribution of Job rotation is an effective training tool is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.279	Retain the null hypothesis.
4	The distribution of Changing tasks contributes to creating a well-equipped employee is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.452	Retain the null hypothesis.
5	The distribution of Training and development brings positive attitude on employees is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.183	Retain the null hypothesis.
6	The distribution of Job rotation is a smart way to guarantee the best training program is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.229	Retain the null hypothesis.
7	The distribution of Job rotation is considered an effective way for a healthy change is the same across categories of Working period at the hospital (years).	Independent-Samples Kruskal-Wallis Test	.033	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 65: Working period at the hospital with training attributes

In this table, the Kruskal-Wallis test shows that 1 out of 7 attributes was rejected since its significance level is below 0.05. We used Mann-Whitney for further testing. After the test, this attribute was rejected since the majority of significance level was higher than 0.05. Variation

exists between attribute 7 with the majority of the working period groups. Some of the results are showed in the tables below:

Attribute 7 showed a variation in opinion between working period groups 1 & 2 with a positive significance level of 0.164.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	15.000
Wilcoxon W	30.000
Z	-1.391
Asymp. Sig. (2-tailed)	.164
Exact Sig. [2*(1-tailed Sig.)]	.364[b]

Table 66: Mann-Whitney test for attribute 7 with the working period at the hospital groups 1 & 2

Attribute 7 showed a variation in opinion between working period groups 1 & 3 with a positive significance level of 0.941.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	49.000
Wilcoxon W	64.000
Z	-.073
Asymp. Sig. (2-tailed)	.941
Exact Sig. [2*(1-tailed Sig.)]	.974[b]

Table 67: Mann-Whitney test for attribute 7 with the working period at the hospital groups 1 & 3

Attribute 7 showed a variation in opinion between working period groups 1 & 4 with a positive significance level of 0.866.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	40.500
Wilcoxon W	193.500
Z	-.169
Asymp. Sig. (2-tailed)	.866
Exact Sig. [2*(1-tailed Sig.)]	.880[b]

Table 68: Mann-Whitney test for attribute 7 with the working period at the hospital groups 1 & 4

Attribute 7 showed a variation in opinion between working period groups 3 & 4 with a positive significance level of 0.536.

	Job rotation is considered an effective way for a healthy change
Mann-Whitney U	151.500
Wilcoxon W	304.500
Z	-.619
Asymp. Sig. (2-tailed)	.536
Exact Sig. [2*(1-tailed Sig.)]	.577[b]

Table 69: Mann-Whitney test for attribute 7 with the working period at the hospital groups 3 & 4

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Adopting job rotation at the hospital is an effective step so far is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.441	Retain the null hypothesis.
2	The distribution of Employees' enhancement comes through training and development is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.727	Retain the null hypothesis.
3	The distribution of Job rotation is an effective training tool is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.222	Retain the null hypothesis.
4	The distribution of Changing tasks contributes to creating a well-equipped employee is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.715	Retain the null hypothesis.
5	The distribution of Training and development brings positive attitudes on employees is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.300	Retain the null hypothesis.
6	The distribution of Job rotation is a smart way to guarantee the best training program is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.206	Retain the null hypothesis.
7	The distribution of Job rotation is considered an effective way for a healthy change is the same across categories of Number of rotations.	Independent-Samples Kruskal-Wallis Test	.519	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 70: Number of rotations with training attributes

In this table, the Kruskal-Wallis test shows that all the attributes failed to reject since their significance level was higher than 0.05. Therefore, there is no variation in the responses, so in this case, no need for Mann-Whitney test.

4.3 Conclusion

After demonstrating detailed results of the multiple tests used to interpret the gathered data, we agreed that these results are sufficient enough to come up with accurate conclusions.

Chapter 5

5. Conclusion and recommendations

5.1 Introduction

The previous chapters covered the appropriate literature for this research, the tested hypotheses and their relative quantitative findings. This chapter will highlight the main results with respect to researches explored throughout the literature. Moreover, limitations of the research and managerial implications will be presented as well as some recommendations viewed as effecting regarding the adoption of job rotation at hospitals.

5.2 Reliability analysis

In brief, reliability refers to the conservation of internal consistency among variables in case the measurements are repeated several times at different instances or different populations. Reliability analysis consists of determining the association of different variables in order to obtain a certain scale. Cronbach Alpha is found to be the most frequently used means by researchers to test reliability: the highest the scale is, the greater the reliability and vice versa (Graham, 2006). In this research, Cronbach's Alpha was used to measure reliability; hence, demographics were not included in this measure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.939	.943	26

Table 71: Cronbach's Alpha

As shown in the table, Cronbach Alpha is 93.9%, more than 70% which indicates that this study is reliable enough.

5.3 Analysis of the main findings

Hypothesis1: Job rotation enhances the competencies and performance of nurses.

- The positive correlation obtained between the ability of job rotation to help in understanding organizational goals and nurses' experience indicates that when the main objectives or goals of the hospital are fully understood by employees, therefore experience, competency and the whole performance are improved too. This outcome is also found within the research of Gomathi and Mohan (2015) who accepted the hypothesis related to understanding organizational goals and employees' development.

- A positive relationship is also noticed between the increase in productivity relative to enhanced employees' competency and the improvement of the whole performance, the development of planning skills, the creation of a well-equipped employee and the increase of self-confidence level. In other words, when competency and skills of nurses are properly developed, productivity will be affected in a positive way which enhances the whole performance including self-confidence level. The same findings are obtained with Kaymaz (2010) who accepted the hypothesis related to the role of increased KSA's on improving the whole performance and satisfaction as well.
- There is a logically expected positive correlation between the positive impacts that job rotation may have on employees' experience and the improvement of

competency (0.477), the increase in productivity, the identification of the best job fit (0.45) and the creation of a well-equipped individual (0.436). Those outcomes were strongly expected because; logically speaking, when employees' experience is developed, all the related skills and competencies will be enhanced too. The latter was a main hypothesis tested in Gomathi's and Mohan's research (2015), where the adoption of job rotation was accepted and proved to be essential for efficiency purposes.

- After performing Spearman-rho test, it was clear that job rotation is seen as an effective step that boosts the overall performance. The latter was concluded from the positive and statistically significant correlation found between adopting job rotation and all the attributes defining performance. According to this test, "H1" is accepted.

- Kruskal-Wallis and Mann- Whitney tests were also performed in order to obtain accurate results about significance levels and on which we based our final decision whether to accept or to reject the hypothesis.

  The main results are registered in the table below:

The attributes of performance	Gender	Age	Level of education	Working period	Number of rotations	Results

Job rotation helps employees in understanding organizational goals	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Productivity increases due to the enhanced competency of employees	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation has a positive impact on employees' experience	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation improves the overall performance	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation helps in identifying the best job fit	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation improves planning and organizing skills	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Employees' know-how is developed through job rotation	Failed to reject	Rejected	Rejected	Failed to reject	Failed to reject	**Failed to reject**
Job rotation is a way to develop a multi-skilled member	Failed to reject	Failed to reject	Rejected	Failed to reject	Failed to reject	**Failed to reject**

Table 72: Hypothesis 1 result summary

Consequently, we verified and proved that hypothesis 1 is accepted; nurses' competencies and performance have a positive relationship with job rotation.

Hypothesis 2: Job rotation increases the satisfaction of nurses.

- An obvious correlation is remarked between considering job rotation as an effective step and enthusiasm (0.510), high morale (0.479), boosting self-confidence level (0.501) and increasing satisfaction as a whole (0.502). In this case, the fact of understanding organizational goals is found to be very effective and essential when it comes to creating a well-equipped employee, who accepts job rotation and who is ready to set new developmental goals.

- The positive correlation was also remarked between job rotation's impact on increasing experience, developing self-confidence levels, decreasing boredom levels and on boosting satisfaction as a whole. The explanation behind this is the following: whenever nurses have a robust experience, they will surely be more confident and satisfied at their job which is good for persistency at work and for the reduction of turnover levels as well. It was also remarked that the majority of respondents consider job rotation as an effective training tool that boosts satisfaction and enthusiasm. Thus, in this case according to respondents, adopting job rotation at the hospital is seen as an effective step that improves nurses' performance as well as hospital's sustainability.

- Another positive correlation is remarked between the ability of job rotation to identify the best job fit and the enthusiasm gained through job rotation as well as with sense of achievement's satisfaction. The two previously mentioned factors are considered as measures of satisfaction at work. Relative to the obtained results, it is obvious that when respondents find the position complying with their capacities, automatically satisfaction will be positively affected. Kaymaz (2010) in his study has showed a support for the hypothesis related to the positive impact of determining the correct position at work through job rotation on employees' motivation (kaymaz, 2010).

- From those previous results, it is obvious that when enthusiasm and psychological comfort are in place, respondents are more likely to work better and found to be eager to face new challenges at work. The same reasoning was shown in the study of Sims (1990) who insisted on the positive impact of job rotation not only on skills, but on employees' morale, on self-satisfaction and on satisfaction as well.

- Relative to Spearman-rho test, a positively significant correlation is maintained between the effectiveness of adopting job rotation and all the attributes that define satisfaction. According to this test, "H2" is accepted.

- Kruskal-Wallis and Mann- Whitney tests were also performed in order to obtain accurate results about significance levels and on which we based our final decision whether to accept or to reject the hypothesis.

  The main results are registered in the table below:

The attributes of satisfaction	Gender	Age	Level of education	Working period	Number of rotations	Results
Job rotation renders employees more enthusiastic	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation allows employees to satisfy their sense of achievement	Failed to reject	Rejected	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
High morale employees give a better performance	Failed to reject	Failed to reject	Rejected	Failed to reject	Failed to reject	**Failed to reject**
Job rotation increases self-confidence level	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation decreases boredom levels	Failed to reject	Failed to reject	Rejected	Failed to reject	Failed to reject	**Failed to reject**
Job rotation reduces employees' turnover	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation is good for satisfaction as a whole	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**

Table 73: Hypothesis 2 result summary

Consequently, we verified and proved that hypothesis 2 is accepted; nurses' satisfaction has a positive relationship with job rotation.

Hypothesis 3: Job rotation is an effective training tool.

- The increase in productivity was highly correlated with respondents' consideration of job rotation as a smart way to guarantee the best training program. From this manner, it is obvious that adopting job rotation at the hospitals is considered an effective tool for training and development, thus for productivity's development. The same result was found within the research of Berber and Slavic (2019) who accepted the hypothesis

related to the impact of training through job rotation and employees' efficacy at work (which means productivity and efficiency).

- This positive correlation was also remarked between the creation of a multi-skilled member through job rotation and the consideration of this concept as the best training program. This finding is also compatible with the research of Mustafa and Taufek (2018), entitled: "The effect of training and development towards employee performance: A case study in Proton Tanjung Malim". Both researchers accepted the hypothesis related to the effect of training design on employees' performance, which is somehow related to considering "on-the-job" training as a smart way for employees' improvement at various levels.

- Furthermore, a positive correlation is observed between the effectiveness of job rotation as a training tool and the development of a multi-skilled member and the positive attitude gained through training and development. In other words, according to respondents, whenever job rotation is adopted, training is found to be effective for healthy change and nurses' development.

- Spearman-rho test proved that there is a positively significant correlation between job rotation and the majority of training attributes. The latter led us to accept "H3" claiming that job rotation is considered an effective training tool for nurses.

- Kruskal-Wallis and Mann- Whitney tests were also performed in order to obtain accurate results about significance levels and on which we based our final decision whether to accept or to reject the hypothesis.

The main results are registered in the table below:

The attributes of training	Gender	Age	Level of education	Working period	Number of rotations	Results
Employees' enhancement comes through training and development	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation is an effective training tool	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Changing tasks contributes to creating a well-equipped employee	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Training and development brings positive attitude on employees	Failed to reject	Failed to reject	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation is a smart way to guarantee the best training program	Failed to reject	Rejected	Failed to reject	Failed to reject	Failed to reject	**Failed to reject**
Job rotation is considered an effective way for healthy change	Failed to reject	Rejected	Failed to reject	Rejected	Failed to reject	**Failed to reject**

Table 74: Hypothesis 3 result summary

Consequently, we verified and proved that hypothesis 3 is accepted; nurses' training has a positive relationship with job rotation.

To summarize this section, the creation of a multi-skilled member through job rotation was positively correlated with the ability to understand organizational goals, the improvement of competency, the increase of self-confidence level and the enhancement of satisfaction as a

whole. So according to respondents, the rotational program is a tool that helps nurses in having an idea about all possible tasks, as a result they will become more confident and strong enough to face any potential obstacle at work.

At this stage, it is crucial to talk about the idea of change since it was taken into consideration within the questionnaire, and respondents had their own perspectives regarding change and its effectiveness. To begin with, it is agreed that job rotation is a way of job redesign and a tool of change as well; that requires full-planning, analysis and continuous modifications in order to show its positive effects on employees (Kennedy and MacLeod, 1993). According to Bliese and Ployhart (2006), employees' strength is shown in their ability to adapt to any potential change in their workplaces. However, the adaptation to change seems to be complicated with age (Peeters and Van Emmerick, 2008). This previous statement is also proved within this study through the negative correlation found between age and the consideration of job rotation as a good idea for a healthy change (-0.230). Moreover, a normal negative correlation of -0.294 is noticed between the age of respondents and the sense of enthusiasm while being subject to job rotation.

5.4 Limitations of the research

The initial plan was to study job rotation at the majority of Lebanese hospitals, in various geographical areas. However, due to the tough Lebanese circumstances, we limited our research to include three hospitals only, located at North Lebanon. Another limitation was faced in getting the approval of hospitals to distribute questionnaires but at the end everything worked out as planned. Moreover, a difficulty was found in spotting appropriate studies due to the lack of researches related to the effects of job rotation in Lebanon. Finally, we would have preferred that we conducted the study on a larger scale for more accurate results.

5.5 Theoretical implications

The findings of this study may have some implications for academics in any topic related to job rotation or training and their effects on employees.

Concerning Lebanon, the majority of studies related to the effects of job rotation are conducted at banks and large companies. Up to the author's knowledge, there is no research studying the effects of job rotation at hospitals in Lebanon. Therefore, this study will fill the gap and will be considered as a support for future relatable studies.

5.6 Managerial Implications

In addition to theoretical implications, the data presented in this study as well as the results are in place to provide some insights about the impact of implementing job rotation at hospitals. The findings are considered as a support for hospitals' directors or human resources managers when it comes to decision making. This research may be a relied on as a reference while proposing strategies to deal properly with the challenges faced especially through the recent fast changing circumstances.

First, the collected responses indicate that nurses are familiar with job rotation; however some of them are not aware of its importance. In other words, they don't recognize the tangible purposes behind implementing such concept. We agreed that organizing a set of awareness campaigns would be an effective idea that allows nurses to deeply understand the objectives behind this implementation and notice its real effects on their career and on their whole performance as well so the overall program becomes more interesting and purpose driven.

Second, we noticed that some respondents were not rotated sufficiently (just 1 or 2 times), which is not enough for an individual to clearly experiment the real impacts of rotation whether on satisfaction, performance or on training. In this case, we recommend excessive rotations

where nurses feel more engaged and eager to develop their performance through an entertaining way.

Third, planning is key. No doubt that job rotation is a complicated process that incurs time, money and huge efforts, thus every single step regarding this issue should be well-studied and planned carefully in order to end up with achieving the aimed positive effects through adopting job rotation.

Fourth, as advice for nurses, it is essential for them to profit from this kind of training and consider it as an opportunity that boosts their overall performance and as a learning process that develops them at various levels.

5.7 Recommendations

From this research, it can be concluded that the majority of nurses are aware of the concept of job rotation as they are involved in it on daily basis. The latter is considered key within hospitals especially in the nursing field.

It was found that 24,41% of respondents were neutral or disagreed the idea of considering job rotation as a booster of enthusiasm; and if we go deeper it is clear that those nurses are the older ones. Therefore, from the previous results, it is recommended for the concerned managers to acquire some strategies in order to make rotation more interesting and routine-breaking.

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Appendices

Appendix A: Questionnaire

This questionnaire is intended for a thesis defense purpose in order to study the concept of job rotation and its effects on nurses.

I kindly request you to answer objectively and honestly since all responses will be held confidential and will be used for an academic purpose only. It is crucial to know that your confidentiality is fully protected because your names are not needed and the answers will be accessible by the researcher only. From this manner, feel free to be as transparent as possible in your responses.

The only potential risk that may be involved is the timing issue; the time needed to fill the questionnaire may be considered an inconvenience for some employees although it will not take more than 15 minutes.

In case of any possible inconvenience or discomfort, you have the right to stop at any stage and withdraw from this study.

I thank you in advance for your contribution

After reading the consent page very well, please write "Approved" below, if you agree, in order to proceed with the questionnaire.

[redacted]

1) Gend

2)

3)

4)

5)

6)

Please **m 1 to 5, with 1 being "strongly disagree" and 5 being "** **X" under your choice**

		1	2	3	4	5
7	s					
8	on					
9	es					
10						
11	ne					
12	g					
13	ed					

14	Job rotation is a way to develop a multi-skilled member					
15	Job rotation renders employees more enthusiastic					
16	Job rotation allows employees to satisfy their sense of achievement					
17	High morale employees give better performance					
18	Job rotation increases self-confidence level					
19	Job rotation decreases boredom levels					
20	Job rotation reduces employees turnover					
21	Job rotation is good for satisfaction as a whole					
22	Employees enhancement comes through training and development					
23	Job rotation is an effective training tool					
24	Changing tasks contributes to creating a well-equipped employee					
25	Training and development brings positive attitude in employees					
26	Job rotation is a smart way to guarantee the best training program					
27	You are a supporter of change as a person					

28	Job rotation is considered an effective way for a healthy change					
29	You feel more comfortable and enthusiastic during the rotation process					
30	The rotational program, adopted by the hospital, encouraged you to set new goals					
31	In general, adopting job rotation is an effective step so far					

Appendix B: Spearman's rho correlation

Correlations

			Adopting job rotation at the hospital is an effective step so far	Job rotation helps employees in understanding organizational goals	Job rotation has a positive impact on employees' experience	Productivity increases due to the enhanced competency of employees	Job rotation improves the overall performance	Job rotation helps in identifying the best job fit	Job rotation improves planning and organizing skills	Employees' know-how is developed through job rotation	Job rotation is a way to develop a multi-skilled member
Spearman's rho	Adopting job rotation at the hospital is an effective step so far	Correlation Coefficient	1.000	.438**	.446**	.477**	.417**	.453**	.486**	.604**	.436**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation helps employees in understanding organizational goals	Correlation Coefficient	.438**	1.000	.551**	.523**	.365**	.420**	.466**	.417**	.398**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation has a positive impact on employees' experience	Correlation Coefficient	.446**	.551**	1.000	.660**	.497**	.516**	.414**	.482**	.456**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Productivity increases due to the enhanced competency of employees	Correlation Coefficient	.477**	.523**	.660**	1.000	.582**	.564**	.388**	.571**	.460**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation improves the overall performance	Correlation Coefficient	.417**	.365**	.497**	.582**	1.000	.549**	.463**	.419**	.459**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation helps in identifying the best job fit	Correlation Coefficient	.453**	.420**	.516**	.564**	.549**	1.000	.470**	.472**	.434**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation improves planning and organizing skills	Correlation Coefficient	.486**	.466**	.414**	.388**	.463**	.470**	1.000	.396**	.394**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.	.000	.000
		N	106	106	106	106	106	106	106	106	106
	Employees' know-how is developed through job rotation	Correlation Coefficient	.604**	.417**	.482**	.571**	.419**	.472**	.396**	1.000	.521**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.	.000
		N	106	106	106	106	106	106	106	106	106
	Job rotation is a way to develop a multi-skilled member	Correlation Coefficient	.436**	.398**	.456**	.460**	.459**	.434**	.394**	.521**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.
		N	106	106	106	106	106	106	106	106	106

**. Correlation is significant at the 0.01 level (2-tailed).

Table 75: Correlation between job rotation and performances' attributes

Appendix C: Spearman's rho correlation

Correlations

			Adopting job rotation at the hospital is an effective step so far	Job rotation renders employees more enthusiastic	Job rotation allows employees to satisfy their sense of achievement	High morale employees give a better performance	Job rotation increases self-confidence level	Job rotation decreases boredom levels	Job rotation reduces employees' turnover	Job rotation is good for satisfaction as a whole
Spearman's rho	Adopting job rotation at the hospital is an effective step so far	Correlation Coefficient	1.000	.510**	.492**	.479**	.501**	.498**	.456**	.502**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106
	Job rotation renders employees more enthusiastic	Correlation Coefficient	.510**	1.000	.414**	.228*	.394**	.306**	.246*	.399**
		Sig. (2-tailed)	.000	.	.000	.019	.000	.001	.011	.000
		N	106	106	106	106	106	106	106	106
	Job rotation allows employees to satisfy their sense of achievement	Correlation Coefficient	.492**	.414**	1.000	.463**	.437**	.458**	.461**	.526**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106
	High morale employees give a better performance	Correlation Coefficient	.479**	.228*	.463**	1.000	.500**	.466**	.411**	.362**
		Sig. (2-tailed)	.000	.019	.000	.	.000	.000	.000	.000
		N	106	106	106	106	106	106	106	106
	Job rotation increases self-confidence level	Correlation Coefficient	.501**	.394**	.437**	.500**	1.000	.468**	.504**	.374**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000
		N	106	106	106	106	106	106	106	106
	Job rotation decreases boredom levels	Correlation Coefficient	.498**	.306**	.458**	.466**	.468**	1.000	.658**	.418**
		Sig. (2-tailed)	.000	.001	.000	.000	.000	.	.000	.000
		N	106	106	106	106	106	106	106	106
	Job rotation reduces employees' turnover	Correlation Coefficient	.456**	.246*	.461**	.411**	.504**	.658**	1.000	.541**
		Sig. (2-tailed)	.000	.011	.000	.000	.000	.000	.	.000
		N	106	106	106	106	106	106	106	106
	Job rotation is good for satisfaction as a whole	Correlation Coefficient	.502**	.399**	.526**	.362**	.374**	.418**	.541**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.
		N	106	106	106	106	106	106	106	106

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 76: Correlation between job rotation and satisfaction's attributes

Appendix D: Spearman's rho correlation

Correlations

			Adopting job rotation at the hospital is an effective step so far	Employees' enhancement comes through training and development	Job rotation is an effective training tool	Changing tasks contributes to creating a well-equipped employee	Training and development brings positive attitude on employees	Job rotation is a smart way to guarantee the best training program
Spearman's rho	Adopting job rotation at the hospital is an effective step so far	Correlation Coefficient	1.000	.482**	.545**	.593**	.426**	.553**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000
		N	106	106	106	106	106	106
	Employees' enhancement comes through training and development	Correlation Coefficient	.482**	1.000	.523**	.582**	.514**	.418**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000
		N	106	106	106	106	106	106
	Job rotation is an effective training tool	Correlation Coefficient	.545**	.523**	1.000	.696**	.427**	.502**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000
		N	106	106	106	106	106	106
	Changing tasks contributes to creating a well-equipped employee	Correlation Coefficient	.593**	.582**	.696**	1.000	.500**	.530**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000
		N	106	106	106	106	106	106
	Training and development brings positive attitude on employees	Correlation Coefficient	.426**	.514**	.427**	.500**	1.000	.468**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000
		N	106	106	106	106	106	106
	Job rotation is a smart way to guarantee the best training program	Correlation Coefficient	.553**	.418**	.502**	.530**	.468**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.
		N	106	106	106	106	106	106

**. Correlation is significant at the 0.01 level (2-tailed).

Table 77**:** Correlation between job rotation and training's attributes