HOW DOES LEADERSHIP STYLE IMPACT IT EMPLOYEE JOB SATISFACTION IN THE AIRLINE INDUSTRY

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By

 Mansi Pandey, B.COM., M.FIN., EMSISS

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This Dissertation is approved for recommendation to the faculty and administration of the University of the Cumberlands.

Dissertation Chair:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dr. Douglas Bennett

Dissertation Committee:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dr. Jennifer Simpson

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Abstract

One Hundred information technology employees in the leading airline company in Chicago, Illinois , were presented with two surveys- MLQ Multifactor Leadership Questionnaire Rater Form (5x-Short) and Job Satisfaction Survey (JSS). MLQ measures Transformational Leadership, Transactional Leadership Style, Laissez-Faire, and JSS measure employees' job satisfaction as an outcome from the leadership style.

 The objective was to identify the effect of leadership styles in employee job satisfaction. While many research studies have looked at employee perceptions of leadership styles in different settings and populations, no studies have focused on the employee perceptions concerning leadership styles in the United Airlines IT team settings and how these leadership styles may, directly and indirectly, influence or shape airline IT employee job satisfaction. Data from 80 respondents were received. Each participant was placed in one of the three years of work experience categories (0-5, 6-10, 11+).

 A correlation matrix was conducted to examine the correlation coefficients between leadership styles and job satisfaction. The results showed a significant association between transformational leadership & job satisfaction. The data analysis revealed that the transformational leadership style was the most preferred, regardless of experience level. Further analysis indicated that laissez-faire & transactional leadership styles were the least preferred.

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# Chapter One

##   Introduction

The research literature shows that leadership styles can influence organizational culture, performance, communication, motivation, and overall employee satisfaction (Chang &Lee, 2007; Fernandez, 2008; Griffith, 2004; Yang &Islam, 2012; Yang, 2014). However, the research literature does not consider a relationship between specific leadership styles and job satisfaction of airline information technology (IT) employees.

 Hence, the purpose of this study is to determine if there is a relationship between leadership style and job satisfaction in the information technology (IT) department of the airline industry and how that relationship impacts employee job satisfaction. The findings of this study could be used to help improve employee job satisfaction. Improvements to employee job satisfaction may contribute to improved customer experience, customer satisfaction, improved communication, and overall company performance (Chang and Lee, 2007; Fernandez, 2008; Griffith, 2004; Yang &Islam, 2012; Yang, 2014).

 Through better leadership, managers can achieve their organizational goals and can increase their productivity of the organization by offering accolades in exchange of services rendered and tasks accomplished (Dartey-Baah & Ampofo, 2015). Conversely,

job dissatisfaction has a negative impact on the turnover in the organization if the employees are dissatisfied with the working conditions and ineffective leadership (Kim &

Fernandez, 2017). However, the research literature does not consider a relationship between specific leadership styles and job satisfaction of airline IT employees. This study identifies the dominant leadership style(s) exist in the IT department of airline industries to determine if there is a relationship between leadership style and employee and job satisfaction.

## *Background*

The fundamental factors influencing the effectiveness of an organization are leadership and job satisfaction (Kennerly 1989). It is important to identify the leadership styles adopted by airline industry and the degree to which each style influences employee satisfaction. Doing so will help to promote the best style for the benefit of the airline industry. Though the correlation of leadership style and employee job satisfaction may be a complex factor to measure, there is a need for data that consider the blending of leadership styles of managers in airline industry; especially those that blend with transformational leadership.  Studies have shown that transformational leadership has been the most preferred leadership styles in airline industry (Assaf, Bashayreh, Alqudah 2016), (Kamisan and King (2013). However, the research literature does not consider which leadership style is most prevalent in the airline industry, and specifically, the IT employees of the airline industry. This study examines the leadership styles to determine if a correlation exists between employee satisfaction and leadership styles. A focal point of transformational leadership is the idea of a shared vision (Northouse, 2016). If managers and subordinates do not perceive effective leadership, similarly, there likely will be differences between their visions for the company which could impact employee job satisfaction and the success of company (Northouse, 2016**).**

## *Purpose of the Study*

In the competitive and challenging business environments of the airline industry, leaders must be quick to respond to the dynamic working environment and implement different leadership strategies to improve customer service and promote efficiency among employees. As leadership affects both leaders and employees, it can transform individual benefits into organizational benefits such as customer satisfaction, and company revenue. In return, effective leadership can motivate employees and increase job satisfaction (Tsai & Su, 2011). Identifying different leadership styles and defining how they influence employee satisfaction and company performance has always been an interest in the airline industry but leadership style identification has become more important for airlines in recent times (Tsai & Su, 2011).

 The information technology (IT) department is an integral part of operations and customer service in the modern airline industry. The IT department has a hierarchical structure with the chief digital officer holding the highest authority above the lower authority levels of junior developers and analysts. Chief digital officer sets the vision and overall strategy for the IT department. The lowest level employees such as developers and analysts help on executing the strategy by building digital applications such airline ecommerce website, mobile application, customer service and call center. The major management groups are directors, managers, analysts, developers and testers. The performance and output of the IT organization is critical for an airline’s day to day operation, revenue, customer experience, and growth strategy. Airline employees and managers expect their leaders to be visionary and inspirational and also decisive and willing to make personal sacrifices (Yukl 2006; Dastmalchian, Javidan & Alam, 2001). In an airline company, when a mission statement indicates a culture is driven by values, that culture becomes a touchstone for effective decision making and organizational behavior, and it also ensures that employees play a role in shaping the values of the organization (Kemp & Dwyer, 2003). While many research studies have examined employee perceptions of leadership styles in different settings and populations, no studies were identified by the researcher that are focused on the employee perceptions concerning leadership styles in United Airlines IT settings and how these leadership styles may, directly and indirectly, influence or shape employee job satisfaction. The findings from the study may provide insights into management practices, with the hopes of reducing employee dissatisfaction leading to turnover and retention issues.

## *Problem Statement*

 Employee performance includes executing defined duties, meeting deadlines, employee competency, effectiveness, and efficiency in doing work. Various organizations need strong leadership styles that stimulate the employee performance. Airlines can face problems such as, poor innovation, low productivity, and the inability to meet performance targets **(**Winston, 1951). These types of problems can result due to lack of strategic interventions of specific leadership styles. As a result, many studies investigate the best leadership style that stimulates performance of employees. The idea of effective organizational leadership style also applies to information technology professionals. The IT professionals also perceive that leaders should not only lead people but also be effective in doing so (Winston, 1951).

 The airline human resource (HR) department instills and encourages the development of core values in the employees. Core values are safety, caring, dependability and efficiency values among its employees as one of its main tasks; one that should be reflected in its leadership style **(**Winston,1951). The challenge for airlines is thus to make sure that leadership practices in its worldwide employee group strive to maintain and practice these values. Meeting these goals will help to ensure employee job satisfaction and customer experience satisfaction. That is, the leadership style should support these goals.

## *Hypothesis*

 The following hypotheses were developed to identify the impact of leadership style factors on employee job satisfaction. Employee job satisfaction inherently influences customer satisfaction and the overall success of a company (Hamidifar, 2009).

### Hypothesis 1

H10: No predominant leadership style is practiced with United Airlines IT employees

H1a: A predominant leadership style is practiced with United Airlines IT employees

### Hypothesis 2

H20: No relationship exists between leadership style and employee job satisfaction

H2a: A relationship exists between leadership style and employee job satisfaction

## *Research Questions*

This study seeks to answer three questions:

* Which leadership styles do United Airline IT employees work under?
* What is the predominant leadership style practiced with United Airlines IT employees?
* How do those leadership styles correlate with United Airlines IT employee job satisfaction?

## *Definitions*

Several terms are used throughout the study and are defined below to add clarity.

In cases where standard definitions are not provided, the terms below are provided with

operational definitions to assist the reader.

United Airlines (UA): A major US airline headquartered in Chicago, Illinois.

Job Satisfaction: Job satisfaction is defined as a positive and pleasant state

resulting from a person's level of engagement, appreciation, motivation, and reward that

one finds in his or her job experience (Demirtas, 2010; Locke, 1976). Spector (1997)

explained that job satisfaction is measured by three components: cognitive, emotional,

and behavioral. These three components are indicators as to how a person evaluates job

satisfaction

Job Satisfaction Survey (JSS): Developed Spector (1985, 1997), the JSS is a

survey to assess job satisfaction on a continuum from low (dissatisfied) to high

(satisfied). The instrument was originally developed for use in the human service sector,

including public and private sectors (Spector, 1985, 1997). The instrument is broken into

nine facets that are used to assess job satisfaction.

Laissez-Faire Leadership: A type of leadership style that is more passive and

reactive when it comes to managing associates (Bass & Avolio, 2004). This type of

leadership style tends to de-emphasize motivation and innovation among the associates

(Bass & Avolio, 2004).

Multifactor Leadership Questionnaire (MLQ - 5X Short Form): Developed by

Bass and Avolio (2004) who expanded on the dimensions of leadership that measure

leadership effectiveness on a continuum. The major leadership constructs include

transformational, transactional, and laissez-faire, which are designed to measure lower

and higher forms of leadership. The instrument has been used extensively in leadership

research over the past 25 years, in several leadership contexts to measure a full range of

leadership performance, characteristics, and behaviors (Bass & Avolio, 2004). The MLQ

details five transformational, three transactional, one laissez-faire, and three

subcomponent factors related to behaviors and tendencies that differentiate effective and

ineffective leaders.

Transformational Leadership: Moving beyond the standards of self-interest to a

leadership type that facilitates empowerment, collaboration, trust, and fostering of

autonomy among the associates (Bass, 1999; Bass & Riggio, 2006).

Transactional Leadership: This type of leadership dimension is focused on roles

and tasks to accomplish specific tasks (Bass & Avolio, 2004). A type of leadership style. that functions on order, structure, and outcomes (Bass & Avolio, 2004).

## *Limitations of the Study*

This study considers IT employees whose work is focused on customer experience. Hence the findings of this study cannot be generalized to all departments of airline employees. The findings of this study are also limited to the perception of leadership styles and their influence on employee job satisfaction. They cannot be generalized to other factors possibly affecting job satisfaction. The findings of this study are based on data collected from October-November 2020 and may not therefore be generalized to all time.

 In the airline industry there are many employees who may have formal leadership training. It is possible that some with formal leadership training who may answer the survey using this knowledge of theory and practice instead of what they actually believe. Mid to low-level managers and leader participants likely have some degree of formal leadership/management training which may provide a more informed response regarding leadership theory and practice in answering the survey.

##

## *Assumptions*

* It is assumed that the survey participants responded with the understanding that they were rating different leadership styles and the influence of styles in their job satisfaction. It is assumed that the participants understood the questions of the Multifactor Leadership Questionnaire survey (MLQ) and Spector’s Job Satisfaction Survey (JSS).
* It is assumed that the participants read all statements thoroughly and answered honestly.

It is assumed that a wide variety of different IT positions and roles within the airline industryof employees participated in the study.

##  Summary

 This study seeks to analyze the relationship between leadership styles and IT employee job satisfaction in the airline industry. Airline employees from the Leadership Group and Followers Group will be participating in the surveys- MLQ and JSS. Multifactor Leadership Questionnaire (MLQ) measures the leadership style, and Job Satisfaction Survey (JSS) measures the employee job satisfaction in an airline working environment.

 According to researchers at Mind Garden (2014), “The MLQ provides an excellent relationship between survey data and organizational outcome and is the benchmark measure of transformational leadership (MLQ).” The Job Satisfaction Survey (JSS) is a well-known and established multidimensional instrument compared to other job satisfaction scales; often investigated for validity and reliability, and it is suitable for measuring employee job satisfaction (Mind Garden, 2014).

 The researcher surveyed same group employees- to analyze their perception of their leader’s leadership style using MLQ Rater Form (5x-short) and to analyze their level of job satisfaction in regard to their leader’s leadership style using JSS. There is a total of 80 respondents across these two surveys- MLQ and JSS. The next chapter outlines the variety of leadership styles that make up the discipline, along with a review of the literature surrounding leadership in airline industry.

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# Chapter Two

## Review of Literature

 The research literature shows that various leadership styles can influence organizational culture, performance, retention, motivation, and overall employee satisfaction (Chang & Lee, 2007; Fernandez, 2008; Griffith, 2004; Yang &Islam, 2012; Yang, 2014). However, there is a gap in the research which does not consider the relationship between specific leadership styles and job satisfaction of information technology (IT) airline employees.

Hence, the focus of this study is to determine the relationship between leadership style and job satisfaction in the airline industry. This study will focus on the leadership style practiced in the information technology department staff which include: directors, managers, analysts, developers and testers. The information technology (IT) department is a key department for managing operations and providing customer service in the airline industry using their mission critical software applications. The efficiency of the IT department is important for the day to day operation and revenue, customer experience, and growth strategy (Yukl 2006; Dastmalchian, Javidan & Alam, 2001). The importance and focus of the study of leadership has increased significantly in the airline industry (Winston, 1951). Improvements to employee job satisfaction may contribute to improve customer experience, customer satisfaction, and

overall company performance (Chang & Lee, 2007; Fernandez, 2008; Griffith, 2004; Yang & Islam, 2012; Yang, 2014).

 Scientific studies of leadership began in the early 1900s. The research literature on leadership has vastly expanded as attestedby scholars who have come up with more than 350 definitions of leadership (Bass 1985). Hence it is a challenging task to give one specific definition of leadership (Bass 1985). In broader terms, leadership is an influential relationship between leaders and followers to function together to reach a defined common goal (Bennis & Nanus 1985; Burns 1978). According to Bennis,the meaning of influence is that the relationship among people is not passive but multidirectional. To be specific, superiors influence subordinates, and subordinates influence superiors. Leadership is different from management. That is, management is concerned with short-term problems within an organization, leadership looks for broader perspective and long-term goals (Ibid). The focus of early leadership theories was on the characteristics of a successful leaders, power, traits, influence, and a situational approach. More recent leadership theories concentrated on the role of followers and the correlated nature of leadership (Hamidifar, 2009). The leader should listen to subordinates and respect their needs but also treat them equitably. An Individual’s needs can be considered by providing learning and growth opportunities (Tichy & Devanna 1996). Great leaders are change agents and visionaries encouraging individuals and having the ability to deal with complexity, ambiguity, and uncertainty (Tichy & Devanna 1996)**.** This study explored how these styles impact IT employee performance and which style is predominant in the IT departments of the airline industry.

## *Significance of the Study*

 The working environment has become more stressful in the globally competitive airline industry (Mudambi, 2015). Job satisfaction can be defined as the emotions and attitudes toward one's working environment **(**Lok and Crawford, 2004). Lok and Crawford (2004) highlight that both organizational performance and effectiveness are the results of organizational satisfaction and job satisfaction. The major factors that influence job satisfaction are organizational culture (Mosadegh Rad and Yarmohammadian, 2006; Schyns et al, 2009); the employee empowerment (Lok and Crawford, 2004); autonomy, recognition, reward, communication, level of professionalism, job security, and flexible workplace (Mosadegh Rad and Yarmohammadian, 2006).

 Change and Lee (2007) suggest job satisfaction of employees can directly contribute to organizational effectiveness, and the motivation of employees can contribute to increased employee performance, customer satisfaction, the development of stronger organizational culture, and a better image and brand for the company. For instance, according to Griffith (2004), leadership has a direct impact on job and employee satisfaction which then directly influences employee motivation and project and program achievement progress. The leadership style directly impacts employee job satisfaction. (Aydin et al, 2013; Chang& Lee 2007, Fernandez, 2008 Schyns et al, 2009; Shaw &Newton, 2014; Webb, 2009; Yang, 2014). Productivity depends on employee satisfaction. If employees are satisfied, they will produce superior quality performance in optimal time and lead to growing profits (Bakotic, 2016). Satisfied employees are also more likely to be creative and innovative and come up with breakthroughs that allow a company to grow and change positively with time and changing market conditions. Employers need for strategic effort directed at satisfying current employees is now urgent than ever to improve retention rates and decrease the associated costs of high turnover. Voluntary turnover is a huge problem for many organizations (Mitchell et al.,2001).

 The leadership and job satisfaction surveys are relevant and valuable in airlines to improve employee satisfaction. Increased employee satisfaction will help improve customer experience, customer satisfaction and overall organizational performance (Chang &Lee, 2007 Griffith, 2004; Yang &Islam, 2012). The research question for this study is as follows:

* Which leadership styles exist in an airline’s IT department?
* What is the predominant leadership style practiced with United Airlines IT employees?
* How do those leadership styles affect job satisfaction for those IT employees?

The findings from this study may provide insights into management practices which may lead to increased job satisfaction, fewer turnover and retention issues, as well as improved organizational performance such as customer satisfaction, and revenue.

## *Literature Review - Leadership styles*

Transformational leadership: Transformational leaders lead by example and inspire followers and colleagues to follow their leadership (Avolio et al. 1991). Rather than relying on orders and commands, transformational leaders stress a vision and a sense of

mission, inspire pride, and gain respect and trust through using charisma (Bass et al.1990). Transformational leaders show different behavior styles.

Idealized influence (attributed/behavior): the leader gains trust and respect by maintaining high moral standards and influence followers to emulate him/her. Idealized influence is attributable (coming from followers) and/or the result of the leader’s behavior style.

 Transformational leaders are change agents and visionaries inspiring individuals and show the ability to deal with complexity, ambiguity, and uncertainty (Tichy & Devanna, 1996)**.**

Transactional Leadership: Transactional leaders lead subordinates to focus on how tasks must be done and the reward jobs done well (Avolio et al*.,*1991). Different types of behavior styles associated with transactional leadership have been identified:

- Contingent Reward: Leadership rewards subordinates for good performance.

- Management by Exception (Active): Leadership monitors and corrects subordinates if required in order for them to perform effectively.

- Management by Exception (Passive): Leadership gives contingent punishment to subordinates if performance doesn’t meet the standard. Hamidifar found that directors and managing directors were more transformational leaders than transactional or laissez-faire (2009). A study of the relationship between leadership styles and employee job satisfaction (Hamidifar, 2009), found that idealized consideration, a transformational leadership factor, and contingent reward, and a transactional leadership factor, were positively significant predictors of job satisfaction.

Laissez-Faire Leadership: Laissez-faire leadership is a passive leadership style. The leader and the followers may not maintain or look for any relationship. In this non-transactional type of leadership style, necessary decisions and actions can be delayed, responsibilities ignored, and authority may not be used effectively. This style is evidently non-leadership and is perceived as not caring at all about subordinates and others (Hamidifar, 2009).

The Full Range leadership development Model: The Full Range Leadership Development Model is a mix of transactional and transformational leadership, developed by Bass and Avolio (1994). It includes five

transformational factors and three transactional factors.

Transformational factors:

1. Idealized influence (attributed)
2. Idealized influence (behavior)
3. Inspirational motivation
4. Individualized consideration
5. Intellectual stimulation

Transactional factors are:

1. Contingent reward
2. Management by exception (active)
3. Management by exception (passive)

Studies show (Gharoieahangar and Alijanirooshan (2004) the effectiveness of transformational and transactional leaders and the degree of employee satisfaction with the leadership. Gharoieahangar and Alijanirooshan (2004) found that transformational and transactional leaderships had a high positive correlation with extra effort, effectiveness and satisfaction. Contingent rewards were positively related to the outcome measures but relatively lower than the transformational scale ratings.

 Management by exception (Active and Passive) and Laissez-Faire had a strong negative correlation with employee job satisfaction and organizational performance. Transactional leadership style was more frequent than transformational leadership and Laissez-faire leadership, was the least commonly occurring leadership style and more frequent among leaders with low educational background, and less managerial experience. It was evident that transformational leadership was found to encourage satisfaction, willingness to apply extra effort and effectiveness among employees(Gharoieahangar &Alijanirooshan,2004).

## *Leadership in a Major Airline in the US*

Identifying different leadership styles and defining how they influence employee satisfaction and company performance has always been an interest in the airline industry, but it became more important topic for airlines in recent times (Winston, 1951).

Airline industry leadership focuses on characteristics of successful leaders, role of followers and correlated nature of leadership (Winston, 1951). Job satisfaction in the airline industry has a direct impact on customer satisfaction, the operational

performance of the airline, and eventually the revenue and future growth in customer base (Winston, 1951).

 The information technology (IT) department is an integral part of operations and customer service in the airline industry. The IT department has a hierarchical structure with the chief digital officer holding the higher authority above the levels of junior developers and analysts. The major management groups are directors, managers, analysts, developers and testers. The performance and output of the entire IT organization is critical for the airlines’ day to day operation and revenue, customer experience, and growth strategy. Airline employees and managers expect their leaders to be visionary and inspirational and also decisive and willing to make personal sacrifices (Yukl 2006; Dastmalchian, Javidan & Alam, 2001). As charismatic leaders help reduce uncertainty, there is a strong preference for visionary, honest, cooperative, generous, concerned, modest, and self-effacing leaders (Winston,1951).

## *Job Satisfaction*

Job satisfaction is generally measured through the positive emotional response from the assessment of a job or specific aspects of a job (Locke 1976; Smith *et al.* 1969). The factors that influence job satisfaction are the working conditions, the work itself, supervision, policy and administration, advancement, compensation, interpersonal relationships, recognition, and empowerment (Castillo & Cano, 2004). According to

Quick (1998), every person can be motivated, if he or she is convinced there is a positive correlation between efforts and performance, and he or she is rewarded well for effective performance. Vroom (1964) suggested that the motivation to work depends on the relationships between expectancy, instrumentality, and valence. Expectancy is the confidence and conviction that working hard will result in a satisfying level of job performance. Instrumentality is the confidence and conviction that successful performance will be followed by rewards. And valence is the value a person holds with respect to output and rewards (Vroom, 1964).

## *Relationship between Leadership and Employee Job Satisfaction*

Leadership style is a major factor of employee job satisfaction (Wexley & Yukl, 1984). The feedback from employees to their leaders usually depends on the type of the employees as well as on the type of the leaders (Wexley & Yukl, 1984). The level of employee job satisfaction is a result of the internal organization environment including organizational climate, leadership types, and inter-personnel relationships (Seashore & Taber, 1975). The relationship between leader and employee has a great influence on the employee’s self-esteem and job satisfaction (Chen & Spector, 1991; Brockner, 1988; DeCremer, 2003). Employees are more satisfied with leaders who are empathetic and

supportive than with those who are either indifferent or negative and critical towards subordinates (Yukl 1971). As Wilkinson and Wagner (1993) stated, it is very stressful for employees to work for a leader who is hostile and unsupportive. Employees expect and prefer a leader who will provide adequate guidance and instructions when they work on difficult tasks (Wexley & Yukl, 1984).

 Negative leader-employee relations can have a significant negative impact on the productivity and efficiency of the organization (Keashly, Trott, & MacLean, 1994; Ribelin, 2003). According to Robbins (2003), the employee attrition rate for employees led by transformational leadership is less than those led by transactional leadership. Transformational leadership seeks to improve working conditions, fulfill the needs of the employees, and help employees to perform better (Liu *et al*. 2003). Employees are motivated by social rewards, self-actualization needs, compensation, and improved working conditions (Cheraghi 1983; Yeganeh *et al.* 2008). Moreover, employee’s job satisfaction is greatly influenced by their attitudes towards their salaries, , and the organization’s al policies (*Ibid*). The importance of for employees must be seen in their need to satisfy their ambitions, desire for status, need to be recognized on the basis of their personal abilities, performance, and contribution to the organization (Mosadeghrad, 2006).

# Chapter Three

##  Procedures and Methodology

 The purpose of this study was to examine the relationship between leadership styles (transformational, transactional, and laissez-faire) of United Airlines (UA) IT leaders (IT director, manager) and followers (developer, analyst, or tester) job satisfaction. The objective was to identify the effect of leadership styles in employee job satisfaction. The literature review outlined several important aspects of leadership styles and how those impact employee job satisfaction. First, there are several leadership styles that make up an important part of the organization. Second, what is known about leadership styles and how they positively and negatively impact employee job satisfaction was was considered and analyzed in a literature review. Using a vetted survey that accounts for the impact of leadership styles on job satisfaction, the research answers some of above questions.

## *Objective and Scope of the Study*

 This study aims to determine the relationship and influence between leadership styles and airline IT employee job satisfaction. In other words, to examine followers’ perception of their leader’s leadership style with follower’ self-perception of their job satisfaction. Through a comprehensive analytical review of the theoretical literature and empirical studies related to leadership styles and employee job satisfaction, the researcher will focus on how the nine-leadership style sub-variables measured in this study influence employee and job satisfaction.

 The objectives of this research can be expressed as follows:

1. To determine the leadership style(s) of airline industry IT departments.

2. To examine the influence of transformational leadership, expressed in the form of five sub-variables idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individualized consideration], on employee job satisfaction as measured in terms of , supervision, recognition,

operating procedure, co-workers, nature of the work, and communication.

3. To study the influence of transactional leadership, expressed in the form of three sub-variables contingent reward and management by exception (active/passive), on employee job satisfaction as measures in terms of , supervision, , recognition, operating procedure, co-worker, nature of the work, and communication.

4. To examine the influence of laissez-faire leadership on employee job satisfaction as

measured in terms of , supervision, recognition,

operating procedure, co-workers, nature of the work, and communication.

*Research Paradigm*

 In every department of an airline there is a leader, and that leader has a predominant leadership style, as does his or her staff. Transformational leadership has been found effective in a variety of aspects of airlines (Seyal, 2015; Shatzer, Caldarella, Hallam, & Brown, 2014; Bateh & Heyliger, 2014) and a large component of this style of leadership is a shared vision (Northouse, 2010). It is also clear that leaders who recognize the needs of their staff have a positive effect on company culture and performance (Hallinger, 2003; Allen, Grigsby, & Peters, 2015). If leaders are unable to identify and effectively utilize their own leadership style and the preferred leadership style of their staff, it could be difficult to motivate employees to work towards common goals and vision. While the research shows correlation of different leadership styles to employee job satisfaction, it is unclear if managers and employees rate the most effective leadership styles similarly. The subsequent information in this chapter further explains the procedures and methodology of this study.

## *Research Design*

 This study seeks to identify the correlation between different leadership styles exists in airline information technology department and the impact of styles to employee job satisfaction and employee performance. The research instrument that measures the leadership style of the manager both by the manager and the employees is the Multifactor Leadership Questionnaire survey (MLQ). The survey itself provides innovative and more accurate data collection methods by rating leadership styles using three different styles or combinations of styles. MLQ accounts for the correlation of different leadership styles and employee job satisfaction and their performance. (Bass, 2014)

 Based on the conceptual framework, research questions were developed to identify the impact of the impact of leadership style on employee job satisfaction.

|  |  |  |
| --- | --- | --- |
| **Research question** | **Sources of data to answer question** | **Analysis** |
| Which leadership styles do United Airline IT employees work under? | MLQ Survey (Paper-pencil based): A self-reported assessment survey. It consists of 45 multiple-choice-questions in the MLQ Rater Form 5x-Short (the current, classic version) using a 5-point Likert style behavioral scale (“Not at all” to “Frequently if not always”) on different types of leadership styles. 80 respondents will be provided the MLQ Survey.Spector’s Job Satisfaction Survey (JSS) will be used to collect data from a minimum of 50-80 respondents (Personalization) Team: Channel- United Webpage and Mobile). This survey will be a paper-pencil based and will include 36 multiple-choice-questions.  | Correlation Matrix will be used to determine if there is an association between two variables: leadership style and job satisfaction. |
| What is the predominant leadership style practiced with United Airlines IT employees? |
| How do those leadership styles correlate with United Airlines’ IT employee job satisfaction? |

## *Sampling Procedures*

 Participants were employees and managers in the personalization information technology department of a major airline headquartered in the United States. Within the IT team, there are 80 employees with varying races and levels of socio-economic status. The study was conducted during the month of October-November 2020.

## *Data Analysis*

 Multifactor Leadership Questionnaire survey (MLQ) (Hamidifar, 2009) and Spector’s Job Satisfaction Survey (JSS) (Hamidifar, 2009) are used for analysis. MLQ was chosen to identify the dominant leadership styles of the UA IT department and to examine how a particular leadership style relates to other styles of leadership and employee job satisfaction, morale, and retention. JSS survey is chosen to help measure job satisfaction using and , morale using recognition and nature of the work and retention using and . In October-November 2020, paper-pencil surveys were hand delivered to participants . Employees and managers at multiple levels were asked to complete it marking answers based on their preferred style of leadership. Participants were also asked to mark their position title, highest educational degree, level of experience in airline and technology, the age group, and their gender. The researcher used the results of the MLQ portion of the survey to test for differences between the employee satisfaction in correlation with different leadership styles. The literature review outlined the importance of leadership styles of managers and that influence employee job satisfaction. Transformational leadership has shown to be effective and managers who adopt this leadership approach will experience success in their organization (Walumbwa, Christensen, & Muchiri, 2013). It is unclear how many managers use this leadership style in the technology department of the airline. It is also unclear if this is the preferred leadership style of subordinates and managers. A primary characteristic of transformational leadership is the idea of a shared vision. (Chai, Hwang, & Joo, 2017). It is theorized that a shared vision will be difficult to construct if subordinates and managers do not prefer the same leadership style. In this study, the researcher tested this notion by asking airline industry subordinates and managers in the same IT department to rate the most effective leadership styles via the MLQ.

##  Summary

This study was a quantitative, nonexperimental, cross-sectional, correlational research design, focusing on examining follower’s perception of their leader’s leadership style to follower’s self-perception of job satisfaction to that leadership style.

Data was collected for at least 80 participants (N=80) in the study to ensure that the conclusion extracted from the statistical analysis was valid.

The MLQ-5x short and JSS were used to collect data to explain if a relationship exists between follower’ perception of their leader’s leadership style to the self-perceived level of job satisfaction. The MLQ-5x short measured the variables of leadership styles, and the JSS as it relates to employees’ job satisfaction. Data from the MLQ and JSS was scored, interpreted, and statistically analyzed to determine whether there were significant differences in self-perceptions held by follower’s perceived leadership style of their leader (e.g., transformational, transactional, and laissez-faire), as measured by the MLQ, and the employees’ self-perceived level of job satisfaction, as measured by the JSS. Descriptive statistics, and correlation analysis answered the research questions. The next chapter will include the results of the data analysis.

# Chapter Four

##  Research Findings

 The purpose of this study was to examine the relationship between leadership styles (transformational, transactional, and laissez-faire) of UA IT leaders (IT director, manager) and followers (developer, analyst, or tester) job satisfaction. The objective was to identify the effect of leadership styles in employee job satisfaction. While many research studies have looked at employee perceptions of leadership styles in different settings and populations, no studies have focused on the employee perceptions concerning leadership styles in united airlines IT team settings and how these leadership styles may, directly and indirectly, influence or shape airline IT employee job satisfaction. The United Airlines (UA) IT employee population is particularly noteworthy considering their extra workload due to responding to 2019 novel coronavirus disease (COVID-19) pandemic. It is expected that the findings from this study will provide insights into management practices with the potential to improve employee job satisfaction which may help reduce employee turnover and increase retention . In this chapter, statistical analyses will answer the research questions related explicitly to leadership styles’ impact on job satisfaction . The first section, Data Collection, provides baseline descriptive and demographic information of the sample. The second section, Results, provides the statistical analysis findings.

## *Data Collection*

Data collection began following the approval of University of the Cumberlands’s IRB (approval #02-0920EX). The Researcher used two data collection instruments for this study. Bass and Avolio’s (2004) MLQ (5x – Short Form) and JSS (Spector, 1997) were used to collect data to determine if a relationship exists between UA IT leaders perceived leadership style of their leader to the self-perceived level of job satisfaction. The procedures outlined in Chapter Three were followed without discrepancies to complete the data collection process.

UA employees were randomly selected from the Personalization IT department via paper-pencil to become volunteer participants. A Letter of cooperation (LOC) was signed by the Personalization IT Director. Once University of the Cumberlands’s IRB approved the signed LOC, paper-pencil surveys were hand-delivered to participants.

Participants were asked to give consent to ensure they understood the scope, methodology, purpose of the study, and eligibility requirements to participate in the study. Participants met the eligibility requirements and agreed to the informed consent page. Participants also completed a demographic questionnaire, the MLQ, and the JSS. The combined survey included five demographic questions, 45 Likert- type MLQ items, and 36 Likert-type JSS items.

The surveys were estimated to be completed within 30 minutes.

## Research data were collected from October 2020 to November 2020. A total of 100 United Airlines employees of a total population of 1500 in the IT department were asked to complete the surveys. A total of 20 participants did not complete the surveys entirely. The final data set yielded a sample size of N = 80, for a response rate of 80%.

## *Results*

## Baseline Descriptive Statistics

## Participants under the first section of the survey were asked six demographic questions designed to obtain a more comprehensive picture of the study population:

How long have you been employed in your current position?

* 0-5 years
* 6-10 years
* 11 or more years

What is your gender?

* Female
* Male

Which category below includes your age?

* 25-35
* 36-45

What is the highest level of school you have completed or the highest degree you have received?

* Bachelor degree
* Master degree

What is your current job role?

* Analyst
* Developer
* Tester

 As illustrated in Table 2, of the 80 participants, 45 (56.25%) self-identify as male, and 35 (43.75%) self-identify as female. As illustrated in Table 3, the respondents' median age was 35 years old (range of 25 to 45-years-old). As illustrated in Table 4, the mean number of years of education experience was 13.22 years (range of 0 to 24 years). As illustrated in Table 5, of the total number of participants, 53 (66.25%) identified having a Bachelor's Degree; 27 (33.75%) identified as having a Master's Degree. As illustrated in Table 6, of the participants, 13 (16.25%) identified as “analysts”, 38 (47.50%) identified as “developers”, 29 (36.25%) identified as “testers”,

### **Table 2:** Frequencies and Percentages of Participants’ Gender Data

|  |  |  |
| --- | --- | --- |
| Gender | Frequency | Percent |
| Male | 45 | 56.25 |
| Female | 35 | 43.75 |
| Total | 80 | 100.0 |

### **Table 3****:** Age Demographic (N = 80)

Age in Years

Mean +/- SD 37.2 +/- 6.17

Min-Max 25.0 – 45.0

Median 35

### **Table 4****:** Years of Experience in united airlines IT department (N = 80)

Years in Service

Mean +/- SD 13.22 +/- 6.27

Min-Max 0.0 – 24.0

Median 12

### **Table 5:** Frequencies and Percentages of Participants’ Highest Degree or Level of School Completed Data

|  |  |  |
| --- | --- | --- |
| Educational Level | Frequency | Percent |
| Bachelor’s Degree | 53 | 66.25 |
| Master’s Degree | 27 | 33.75 |
| Total | 80 | 100.0 |

### **Table 6:** Frequencies and Percentages of Type of Setting of Current Work

|  |  |  |
| --- | --- | --- |
| Setting | Frequency | Percent |
| Analyst | 13 | 16.25 |
| Developers | 38 | 47.50 |
| Testers | 29 | 36.25 |
| Total | 80 | 100.0 |

## *Descriptive Statistics for MLQ Items*

Participants are allowed to rate their leaders' leadership behavior in the MLQ rater form (Bass & Avolio, 2004). The MLQ measures three leadership styles that include transformational leadership behaviors, transactional leadership behaviors, and laissez-faire leadership behaviors. Table 7 provides descriptive statistics for UA employees' self-perception of their leaders' leadership style

### **Table 7:** UA employees Ratings of Their Leaders’ Leadership Styles (N = 80)

|  |  |  |
| --- | --- | --- |
| Leadership Styles |  Mean | Std. Deviation |
| **Transformational Leadership Style** |  |  |
| Idealized Influence (Attribute) | 3.57 | 0.81 |
| Idealized Influence (Behaviors) | 3.60 | 0.81 |
| Inspirational Motivation | 3.65 | 0.83 |
| Intellectual Stimulation | 3.68 | 0.75 |
| Individual Consideration**Transactional Leadership Style** | 3.63 | 0.47 |
| Contingent Reward | 2.97 | 0.38 |
| Management-by-Exception (Active) | 2.62 | 0.33 |
| Management-by-Exception (Passive)**Laissez-Faire Leadership Style** | 2.09 | 0.26 |
| Laissez-Faire | 0.76 | 1.33 |

Note: Calculation of averages by scale. MLQ scale scoring: 0.0 to 1.0 = minimally to

never; 1.0 to 2.0 = once in a while to sometimes; 2.0 to 3.0 = sometimes to fairly often; 3.0 to 4.0 = fairly often to frequently, if not always.

 MLQ survey results in table 7 shows how employees perceived the leadership styles of their leaders. The higher mean scores for each leadership scale indicated more of a tendency for UA leaders to practice that specific leadership style. Regarding the three scales of leadership style, the transformational leadership style had the highest mean (M = 3.626, SD = 0.734), followed by the transactional leadership style (M = 2.56, SD = 0.323), then by laissez-faire leadership style (M = 0.76, SD = 1.33). The results demonstrated that UA leaders exhibit the three different types of leadership styles to varying degrees.

## *Descriptive Statistics for JSS Items*

 The JSS (Spector, 1997), a nine-facet scale, allowed UA IT employees to assess their attitudes about his/her job and aspects of the position. The JSS scoring items are grouped into nine facets. These facets are supervision, , contingent rewards, operating procedures, coworkers, nature of work, and communication and were removed from the study as they do not apply to UA employees’ overall job satisfaction. The scores were rated marginally high on average, with averages ranging from 13.35 to 22.70, indicating that employees were satisfied. UA employees reported higher satisfaction with supervision variable, followed by coworkers and nature of work, while the lowest facet satisfaction score was operating conditions. Table 8 shows the descriptive statistics of UA employee’s overall job satisfaction.

### **Table 8:** UA employees’ Rating of Their Overall Job Satisfaction (N = 80)

|  |  |  |
| --- | --- | --- |
| Job Satisfaction | Mean |  Std. Deviation |
| Supervision | 22.70 | 2.68 |
| Operating Conditions | 13.25 | 2.05 |
| Contingent Rewards | 16.00 | 1.00 |
| Coworkers | 22.27 | 3.11 |
| Nature of Work | 21.86 | 2.55 |
| Communication | 21.03 | 1.78 |

Note: Job Satisfaction Summated Scale Scoring: 4 to 11= dissatisfied, 12 to 15.99 = ambivalent, 16 to 24 = satisfied.

## *Research Question 1 Analysis Results*

RQ1 : Which leadership styles do United Airline IT employees work under?

As shown in table 7, the results demonstrated that UA leaders exhibit the three different types of leadership styles- Transformational, Transactional and Laissez Faire to varying degrees.

## *Research Question 2 Analysis Results*

RQ2 : What is the predominant leadership style practiced with United Airlines IT employees?

### Hypothesis 1

H10: No predominant leadership style practiced with United Airlines IT employees

H1a: A predominant leadership style practiced with United Airlines IT employees

As shown in table 7, the transformational leadership style had the highest mean (M = 3.626, SD = 0.734), followed by the transactional leadership style (M = 2.56, SD = 0.323), then by laissez-faire leadership style (M = 0.76, SD = 1.33). The results demonstrated that UA leaders exhibit the three different types of leadership styles to varying degrees. Hence, H1a exists.

## *Research Question 3 Analysis Results*

RQ3: How do different leadership styles affect United Airlines’ IT employee job satisfaction?

### Hypothesis 2

H20: No relationship exists between leadership style and the employee job satisfaction

H2a: Relationship exists between leadership style and the employee job satisfaction; directional or non-directional. Hence, H2a exists.

 As shown in Table 9, a correlation matrix was used to examine the correlation coefficients between leadership styles and job satisfaction. The following summary identified the significant associations between perceived leadership styles and job satisfaction:

 Transformational leadership style showed a strong positive correlation with supervision (r = .86, p < .05), contingent reward (r = .71, p < .05), and communication (r = .66, p < .05); a moderate positive correlation to nature of work (r= .50, p < .05) and operating conditions (r.34, p < .05), a weak positive correlation to coworkers (r =.26, p < .05);

 Transactional leadership showed a very weak negative correlation with operating conditions (r = -.35, p < .05) facet only; and

 Laissez-faire leadership showed a strong negative correlation with supervision (r= -.20 p < .05); moderate negative correlation to coworkers (r = -.19, p <.05) communication (r = -.13, p < .05), and negative weak correlation to contingent reward (r = -.10, p < .05), operating conditions (r = -.10, p < .05), and very weak negative correlation to nature of work (r = -.03, p < .05).

### Table 9

*Correlation Matrix for Leadership Styles and Job Satisfaction Facets (N = 137)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | SUP | CR | OC | CW | NOW | COM |
| SUP |  - |  |  |  |  |  |
| CR |  -.15 | - |  |  |  |  |
| OC | .28 | -.32 |  - |  |  |  |
| CW | .11 | -.18 |  .20 |  - |  |  |
| NOW | .37 | -.07 |  .32 | .19 |  - |  |
| COM | .57 | -.46 |  .53 | .41 |  .48 |  - |
| TF | .86 |  .71 |  .34 | .26 |  .50 |  .66 |
| TA |  -.05 |  -.18 |  -.35 | -.02 |  -.02 | .04 |
| LF |  -.20 |  -.10 |  .10 |  -.19 |  -.03 |  -.13 |

Note: SUP = Supervision; CR = Contingent Reward; CW = Coworkers; NOW = Nature of Work; COM = Communication; TF = Transformational; TA = Transactional; LF = Laissez-Faire

##  Summary

The objective of this chapter was to examine the relationship between leadership styles (transformational, transactional, and laissez-faire) of UA IT leaders (IT director, development manager) and employee (developer, analyst, or tester) job satisfaction.

 Regarding the first research question, the statistical analysis of MLQ survey demonstrated that UA leaders exhibit the three different types of leadership styles to varying degrees – transformational, transactional and laissez faire, using the MLQ Rater Form (5x-short).

 Regarding the second research question, transformational is the

predominant leadership style, determined using the mean and standard deviation from the nine sub-variables of MLQ leadership styles.

 Regarding the third research question, a correlation matrix was conducted to examine the correlation coefficients between leadership styles and job satisfaction. The results showed a significant association between transformational leadership styles and job satisfaction. The data analysis revealed that the transformational leadership style was the most preferred, regardless of experience level. Further analysis indicated that laissez-faire and transactional leadership styles were the least preferred.

# Chapter Five

##  Discussion, Conclusions, and Recommendations

 This study examined the relationship between leadership styles (transformational, transactional, and laissez-faire) of UA IT leaders (IT director, manager) and followers (developer, analyst, or tester) job satisfaction. The objective was to identify which leadership style was correlated to employee job satisfaction. In this chapter, the Researcher discusses the findings, limitations, and recommendations for practice and future research in United IT employee satisfaction.

 Transformational leadership theory (Bass & Riggio, 2006) was used for this study's theoretical framework. Burns' (1978) conceptualized transformational leadership as leaders who inspire, support, and collaborate with followers to advance motivation and moral positions. Bass (1985) and Leithwood (1994) extended the theory to explain how leaders' transformational leadership behaviors and activities influence organizational performance. The transactional leadership style focuses on the contractual exchange between the leader and follower for increased productivity. Laissez- faire leadership is described as non-leadership, meaning the leader fails to make decisions and choices for the organization's betterment and offers rewards to followers (Bass & Avolio, 2004).

 The definition of leadership style, as measured through the administration of the MLQ, was used in this study. The Researcher used the MLQ-5X rater form, a validated measurement tool of the three distinct leadership styles distinct leadership styles (Bass & Avolio, 2004; Bass & Riggio, 2006). Transformational, transactional, and laissez-faire leadership styles are the major leadership styles under the MLQ Survey. Job satisfaction, as measured through the administration of the JSS, as developed by Spector (1985, 1997), was used in this study with facets - supervision, contingent reward, operating conditions, coworkers, nature of work, and communication.

 A quantitative methodology was used to analyze data collected from 80 UA employees from the IT personalization department. The primary goal of this quantitative study was to (a) identify the leadership styles that exist in the UA IT department and (b) explain the effect of leadership styles in employee job satisfaction.

The outcome of this study showed a statistically significant correlation between job satisfaction and transformational leadership.

*Interpretation of Findings Descriptive Statistics of MLQ and JSS Items*

 The quantitative results reveal that UA IT employees (N = 80) rated their leaders as being more transformational (M = 3.626, SD = 0.734), in their leadership style compared to transactional (M = 2.56, SD = 0.323), and laissez-faire (M = 0.76, SD = 1.33). Leadership scale scores have a range possibility of 0 (not at all) to 4

(frequently, if not always). The breakdown of each leadership style subfactors

is provided. As shown in Table 7, UA IT employees perceived that their leaders show

relatively high transformational leadership behaviors consistent to intellectual stimulation (M = 3.68, SD = 0.75) and inspirational motivation (M = 3.65, SD = 0.83). UA IT employees rated their leader relatively lower on transformational leadership behaviors consistent with individual consideration M = 3.63, SD = 0.47), and idealized influence (behaviors); (M = 3.60, SD = 0.81) and idealized influence (attribute) (M = 3.57, SD = 0.81). UA IT employees suggested that transactional leadership behavior of contingent reward (M = 2.97, SD = 0.38) is prominent. These findings are consistent with the description of transformational leaders in the literature as being more respected, ethically sound, visionaries, lead with purpose, creative, and use these methods to transform the culture and climate (see Bass & Avolio, 2004; Bass & Riggio, 2006; Leithwood, (1992). Bass (1985) explained that transformational and transactional leadership styles complement each other, not dichotomous, which could explain why transactional leadership behavior contingent reward was relatively high in this study and consistent with transformational leadership behavior scores.

 UA IT employees perceived their leader as less transactional, specifically related to management-by-exception (active) (M = 2.62, SD = 0.33), management-by-exception (passive) (M = 2.09, SD = 0.26), and laissez-faire (M = 0.76, SD = 1.33). These results confirm laissez-faire and management-by-exception constructs are less used in UA IT settings, indicating UA IT leaders are using some form of effective leadership behaviors in practice. A leader who exhibits laissez-faire

and management-by-exception behaviors have minimal interaction with their employees, fail to intervene, or will monitor problems and take corrective action when mistakes surface (Bass & Avolio, 2004).

 As presented in Table 8, UA IT employees’ overall rating of their job satisfaction was highly satisfied. The results indicated that UA IT employees’ rated supervision (M = 22.70, SD = 2.68), and coworkers (M = 22.27, SD = 3.11), nature of work (M = 21.86, SD = 2.55) and communication (M = 21.03, SD = 1.78), are highly satisfied in in these facets of job satisfaction. UA IT employees rated contingent reward (M = 16.00, SD = 1.00), and operating conditions (M = 13.35, SD = 2.05) as less satisfied facets of job satisfaction.

## *Research Question 1 Discussion of Findings*

RQ1 : Which leadership styles have been adopted by United Airline IT employees?

 MLQ survey results in table 7 proves how employees perceived the leadership styles of their leaders. The higher mean scores for each leadership scale showed a tendency for UA leaders to practice that specific leadership style. Out of the three scales of leadership styles, the transformational leadership style had the highest mean (M = 3.626, SD = 0.734), followed by the transactional leadership style (M = 2.56, SD = 0.323), then by laissez-faire leadership style (M = 0.76, SD = 1.33). The

results demonstrated that UA leaders showed the three different types of leadership styles to varying degrees.

RQ2 : What is the predominant leadership style practiced with United Airlines IT employees?

 As shown in table 7, the transformational leadership style had the highest mean (M = 3.626, SD = 0.734), followed by the transactional leadership style (M = 2.56, SD = 0.323), then by laissez-faire leadership style (M = 0.76, SD = 1.33). The results demonstrated that UA leaders exhibit the three different types of leadership styles to varying degrees.

RQ3: How do different leadership styles affect United Airlines’ IT employee job satisfaction?

 A correlation matrix was used to describe the strength and direction of the linear relationships among leadership styles and job satisfaction, as presented in Table 9. The findings revealed transformational leadership was statistically significant and positively correlated to all job satisfaction facets. Transactional leadership is statistically significant and negatively correlated to all job satisfaction facets except communication. Findings show laissez-faire leadership is statistically significant and negatively correlated to all job satisfaction facets except operating conditions and contingent rewards. The data suggest UA IT employees prefer leadership styles relative to transformational leadership.

 The transformational leadership style shows a statistically significant positive relationship with the job satisfaction facets measured in this study. Each job satisfaction facet showed a positive coefficient. This indicates that as the value of transformational leadership behaviors tend to increase, so do scores for each job satisfaction facet. The laissez-faire leadership style was statistically significant and showed a negative relationship to all job satisfaction facets except operating conditions and contingent rewards,.

 Findings in this study are consistent with other studies that confirmed a significant correlation between leadership styles and job satisfaction (see Amin et al., 2013; Barnett et al., 2005; Bogler, 2001; Braun et al., 2013; Griffith, 2004; Koh et al., 1995; Leithwood et al., 2008; Sayadi, 2016; Skaalvik & Skaalvik, 2011). This study's results support the findings of Koh et al.'s (1995) and Nyenyembe et al.'s (2016) research that examined leadership styles and job satisfaction. They found leaders who practiced transformational leadership behaviors were more satisfied with their jobs. Previous studies have determined transactional leadership style shows a relatively weak relationship with job satisfaction (Bogler, 2001; Koh et al., 1995; Nguni et al., 2006). However, the results suggest indicated a negative relationship between transactional leadership style and job satisfaction. This study matches previous studies (Hariri et al., 2016; Nyenyembe et al., 2016; Sayadi, 2016) that laissez-faire leadership style indicated a negative relationship to employee job satisfaction.

## *Limitations of the Study*

 Several practical limitations are presented in this study's execution that may have

influenced the study's outcome. First, the COVID-19 pandemic and the remote working culture during the pandemic may have caused new working environment and the perception about leadership styles.

 Second, the instruments' self-report nature may impact participants' ability to provide accurate and honest answers. UA IT employees' memory of their leader's leadership behaviors and emotional state, especially during new working environment in this pandemic, may have affected survey responses. The MLQ and JSS questions and answer options may have been interpreted differently or unclear to the participants.

Third, the study was limited to UA IT employees who worked in IT personalization team. Consequently, excluding different UA IT settings will affect the study's generalizability to other settings.

 Finally, a limitation of the study centered on the cross-sectional research design. The research variables were restricted to a specific timeline. Limiting variables from being measured multiple times over an extended period does not allow for examining leadership behaviors that may vary in time and influence job satisfaction.

## *Recommendations*

 The study was designed to test the leadership styles and the influence on UA IT employee job satisfaction in UA IT personalization team settings. Conceptually, in UA

IT settings, transformational leaders have been shown to have an ability to balance accountability mandates and simultaneously abandon fixed mindsets to transform and strengthen organizational structures (Leithwood & Jantzi, 2000; Marks & Printy, 2003; Nguni et al., 2006; Ross & Gray, 2006). Moreover, transformational leaders exhibit leadership qualities that inspire, motivate, intellectually stimulate, and nurture positively impact many domains within a work environment. These results supported

the Transformational Leadership Theory by showing a positive impact of transformational leadership on job satisfaction. Laissez- faire leadership style negatively correlated to all job satisfaction facets except operating conditions and contingent rewards. UA IT personalization settings, therefore, should implement a practical leadership path to help leaders develop transformational leadership competencies and behaviors. UA IT leaders need to recognize if their leadership style is positively or negatively affecting the employees’ motivation, morale, job performance, and satisfaction.

 The study was limited to specific settings and teams. The study can be extended to other contexts, such as more IT departments, and business units. Expanding the research to these areas will help researchers better understand leadership styles and their impact on job satisfaction.

 The study examined three distinct leadership styles (transformational, transactional, and laissez-faire) from a broader perspective. Future research should look at each leadership style sub-factor from a broader lens to gain a deeper

understanding of the relationship between leadership styles and job satisfaction.

Additional research is needed to examine the relationship between leadership and job satisfaction from a larger sample size representative of the whole UA employees. Collecting data from a larger sample size and producing the same results would increase the reliability of the study.

 The employees' demographics in this study focused solely on age, gender, years of experience, and educational level. Recommendations for future research could involve replicating this study using the same and/or different demographic variables, as mentioned in a different setting.

 Finally, another option is that the MLQ instrument has a leader self-rater form, where the UA leader can assess themselves as leaders. UA IT leaders can evaluate how frequently or to what degree they exhibit specific leadership style behaviors towards the employees. Future research can examine similarities and differences in how UA IT leaders and employees perceive the practiced leadership style.

##  Conclusion

The interplay between employee job satisfaction and leadership style is dynamic and is defined by how the leader sets the climate and culture. Based on the study's results, it can be postulated with a specific leadership style that UA IT employees will better navigate and accept the challenges brought on by institutional changes and

accountability standards. UA leaders must assess and adjust their leadership style to fit the needs of the employees and meet the needs of the organization. Thus, it is the leader's responsibility to identify and adjust a leadership approach to each circumstance to keep job satisfaction high.

 The relationship between leadership styles and job satisfaction was confirmed in the study. The statistical analysis of MLQ survey demonstrated that UA leaders exhibit the three different types of leadership styles to varying degrees – transformational, transactional and laissez-faire, using the MLQ Rater Form (5x-short).

 Transformational exhibited as the most preferred and predominant leadership style, determined using the mean and standard deviation from the nine sub-variables of MLQ leadership styles.

 The quantitative results reveal that UA IT employees (N = 80) rated their leaders as being more transformational (M = 3.626, SD = 0.734), in their leadership style compared to transactional (M = 2.56, SD = 0.323), and laissez-faire (M = 0.76, SD = 1.33).

 The results showed a significant association between transformational leadership styles and job satisfaction. The data analysis revealed that the transformational leadership style was the most preferred, regardless of experience level. Further analysis indicated that Laissez-Faire and Transactional leadership styles were the least preferred.

These results paralleled research literature that has examined

similar variables. As identified in the study, UA IT employees are happier and more satisfied when UA IT leaders adopt transformational leadership behaviors. While the study examined the relationship between leadership and job satisfaction, as described above, a multitude of factors interfaces with job satisfaction. A minor adjustment, such as shaping leadership styles to job satisfaction, can enhance employee performance.

 The findings from this research could be the catalyst for building strategic action plans for the UA Executive Leadership Team to create training platforms that focus on transformational leadership, mentoring and coaching, and developmental programs for current airline industry professionals.

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# Appendix A

## *Multifactor Leadership Questionnaire Rater Form (5x-Short)*

**MLQ Multifactor Leadership Questionnaire**

**Rater Form (5x-Short)**

Name of Leader: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Organization ID #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Leader ID #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This questionnaire is to describe the leadership style of the above-mentioned individual as you perceive it. Please answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.** Please answer this questionnaire anonymously.

IMPORTANT (necessary for processing): Which best describes you?

\_\_\_ I am at a higher organizational level than the person I am rating.

\_\_\_ The person I am rating is at my organizational level.

\_\_\_ I am at a lower organizational level than the person I am rating.

\_\_\_ I do not wish my organizational level to be known.

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits the person you are describing. Use the following rating scale:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Not at all**  | **Once in a while**  | **Sometimes**  | **Fairly often**  | **Frequently,** **if not always**  |
| 0  | 1  | 2  | 3  | 4  |

*THE PERSON I AM RATING. . .*

1. Provides me with assistance in exchange for my efforts ......................... 0 1 2 3 4

2. Re-examines critical assumptions to question whether they are appropriate .... 0 1 2 3 4

3. Fails to interfere until problems become serious .......................................... 0 1 2 3 4

4. Focuses attention on irregularities, mistakes, exceptions, and deviations from standards………………………………………………………………0 1 2 3 4

5. Avoids getting involved when important issues arise ............................. 0 1 2 3 4

6. Talks about their most important values and beliefs ............................... 0 1 2 3 4

7. Is absent when needed ......................................................................... 0 1 2 3 4

8. Seeks differing perspectives when solving problems ......................... 0 1 2 3 4

9. Talks optimistically about the future ...................................................... 0 1 2 3 4

10. Instills pride in me for being associated with him/her .............................. 0 1 2 3 4

11. Discusses in specific terms who is responsible for achieving performance targets ...... 0 1 2 3 4

12. Waits for things to go wrong before taking action ........................................ 0 1 2 3 4

13. Talks enthusiastically about what needs to be accomplished ......................... 0 1 2 3 4

14. Specifies the importance of having a strong sense of purpose ................... 0 1 2 3 4

15. Spends time teaching and coaching .............................................................. 0 1 2 3 4

16. Makes clear what one can expect to receive when performance goals are achieved ................ 0 1 2 3 4

17. Shows that he/she is a firm believer in “If it ain’t broke, don’t fix it.” .......... 0 1 2 3 4

18. Goes beyond self-interest for the good of the group .............................. 0 1 2 3 4

19. Treats me as an individual rather than just as a member of a group ............. 0 1 2 3 4

20. Demonstrates that problems must become chronic before taking action ............................. 0 1 2 3 4

21. Acts in ways that builds my respect .............................................................. 0 1 2 3 4

22. Concentrates his/her full attention on dealing with mistakes, complaints, and failures…………………………………. 0 1 2 3 4

23. Considers the moral and ethical consequences of decisions .......................... 0 1 2 3 4

24. Keeps track of all mistakes .................................................................... 0 1 2 3 4

25. Displays a sense of power and confidence .................................................... 0 1 2 3 4

26. Articulates a compelling vision of the future.................................................. 0 1 2 3 4

27. Directs my attention toward failures to meet standards .................................. 0 1 2 3 4

28. Avoids making decisions ............................................................................. 0 1 2 3 4

29. Considers me as having different needs, abilities, and aspirations from other......... 0 1 2 3 4

30. Gets me to look at problems from many different angles .............................. 0 1 2 3 4

31. Helps me to develop my strengths ................................................................... 0 1 2 3 4

32. Suggests new ways of looking at how to complete assignments .................... 0 1 2 3 4

33. Delays responding to urgent questions ........................................................ 0 1 2 3 4

34. Emphasizes the importance of having a collective sense of mission .............. 0 1 2 3 4

35. Expresses satisfaction when I meet expectations ............................................. 0 1 2 3 4

36. Expresses confidence that goals will be achieved .......................................... 0 1 2 3 4

37. Is effective in meeting my job-related needs ................................................. 0 1 2 3 4

38. Uses methods of leadership that are satisfying ............................................. 0 1 2 3 4

39. Gets me to do more than I expected to do ..................................................... 0 1 2 3 4

40. Is effective in representing me to higher authority .......................................... 0 1 2 3 4

41. Works with me in a satisfactory way ..................................................... 0 1 2 3 4

42. Heightens my desire to succeed ...................................................................... 0 1 2 3 4

43. Is effective in meeting organizational requirements ................................... 0 1 2 3 4

44. Increases my willingness to try harder .................................................... 0 1 2 3 4

45. Leads a group that is effective ....................................................................... 0 1 2 3 4

# Appendix B

## *Job Satisfaction Survey*

|  |  |  |
| --- | --- | --- |
|  | **JOB SATISFACTION SURVEY**Paul E. SpectorDepartment of PsychologyUniversity of South Florida Copyright Paul E. Spector 1994, All rights reserved. |  |
|  | PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINIONABOUT IT. | Disagree very muchDisagree moderatelyDisagree slightlyAgree slightlyAgree moderatelyAgree very much |
|  1  | I feel I am being paid a fair amount for the work I do. |  1 2 3 4 5 6 |
|  2 | There is really too little chance for on my job. |  1 2 3 4 5 6 |
|  3 | My supervisor is quite competent in doing his/her job. |  1 2 3 4 5 6 |
|  4  | I am not satisfied with the benefits I receive. |  1 2 3 4 5 6 |
|  5 | When I do a good job, I receive the recognition for it that I should receive. |  1 2 3 4 5 6 |
|  6 | Many of our rules and procedures make doing a good job difficult. |  1 2 3 4 5 6 |
|  7 | I like the people I work with. |  1 2 3 4 5 6 |
|  8 | I sometimes feel my job is meaningless. |  1 2 3 4 5 6 |
|  9 | Communications seem good within this organization. |  1 2 3 4 5 6 |
| 10 | Raises are too few and far between. |  1 2 3 4 5 6 |
| 11 | Those who do well on the job stand a fair chance of being promoted. |  1 2 3 4 5 6 |
| 12 | My supervisor is unfair to me. |  1 2 3 4 5 6 |
| 13 | The benefits we receive are as good as most other organizations offer. |  1 2 3 4 5 6 |
| 14 | I do not feel that the work I do is appreciated. |  1 2 3 4 5 6 |
| 15 | My efforts to do a good job are seldom blocked by red tape. |  1 2 3 4 5 6 |
| 16 | I find I have to work harder at my job because of the incompetence of people I work with. |  1 2 3 4 5 6 |
| 17 | I like doing the things I do at work. |  1 2 3 4 5 6 |
| 18 | The goals of this organization are not clear to me. |  1 2 3 4 5 6 |

|  |  |  |
| --- | --- | --- |
|  | PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINIONABOUT IT. Copyright Paul E. Spector 1994, All rights reserved. | Disagree very mcuhDisagree moderatelyDisagree slightlyAgree slightlyAgree moderatelyAgree very much |
| 19  | I feel unappreciated by the organization when I think about what they me. |  1 2 3 4 5 6 |
| 20 | People get ahead as fast here as they do in other places.  |  1 2 3 4 5 6 |
| 21 | My supervisor shows too little interest in the feelings of subordinates. |  1 2 3 4 5 6 |
| 22 | The benefit package we have is equitable. |  1 2 3 4 5 6 |
| 23 | There are few rewards for those who work here. |  1 2 3 4 5 6 |
| 24 | I have too much to do at work. |  1 2 3 4 5 6 |
| 25 | I enjoy my coworkers. |  1 2 3 4 5 6 |
| 26 | I often feel that I do not know what is going on with the organization. |  1 2 3 4 5 6 |
| 27 | I feel a sense of pride in doing my job. |  1 2 3 4 5 6 |
| 28 | I feel satisfied with my chances for salary increases. |  1 2 3 4 5 6 |
| 29 | There are benefits we do not have which we should have. |  1 2 3 4 5 6 |
| 30 | I like my supervisor. |  1 2 3 4 5 6 |
| 31 | I have too much paperwork. |  1 2 3 4 5 6 |
| 32 | I don't feel my efforts are rewarded the way they should be. |  1 2 3 4 5 6 |
| 33 | I am satisfied with my chances for .  |  1 2 3 4 5 6 |
| 34 | There is too much bickering and fighting at work. |  1 2 3 4 5 6 |
| 35 | My job is enjoyable. |  1 2 3 4 5 6 |
| 36 | Work assignments are not fully explained. |  1 2 3 4 5 6 |

# Appendix C

## *Mean and SD for UA employees Ratings of Their Leaders’ Leadership Styles*

*Idealized Influence (Attribute):*

Standard Deviation, σ: 0.81815340859768

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 286 |
| Mean, μ: | 3.575 |
| Variance, σ2:  | 0.669375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (3 - 3.575)2 + ... + (1 - 3.575)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 53.55 |
|  |
| 80 |

 |
| =  | 0.669375 |

|  |  |
| --- | --- |
| σ =  | √0.669375 |
| =  | 0.81815340859768 |

*Idealized Influence (Behaviors):*

Standard Deviation, σ: 0.815475321515

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 288 |
| Mean, μ: | 3.6 |
| Variance, σ2:  | 0.665 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (4 - 3.6)2 + ... + (2 - 3.6)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 53.2 |
|  |
| 80 |

 |
| =  | 0.665 |

|  |  |
| --- | --- |
| σ =  | √0.665 |
| =  | 0.815475321515 |

 *Inspirational Motivation*

Standard Deviation, σ: 0.83815273071201

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 292 |
| Mean, μ: | 3.65 |
| Variance, σ2:  | 0.7025 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (4 - 3.65)2 + ... + (2 - 3.65)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 56.2 |
|  |
| 80 |

 |
| =  | 0.7025 |

|  |  |
| --- | --- |
| σ =  | √0.7025 |
| =  | 0.83815273071201 |

 *Intellectual Stimulation*

Standard Deviation, σ: 0.75156087577787

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 295 |
| Mean, μ: | 3.6875 |
| Variance, σ2:  | 0.56484375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (4 - 3.6875)2 + ... + (1 - 3.6875)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 45.1875 |
|  |
| 80 |

 |
| =  | 0.56484375 |

|  |  |
| --- | --- |
| σ =  | √0.56484375 |
| =  | 0.75156087577787 |

*Individual Consideration*
Standard Deviation, σ: 0.47265043901387

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 290.5 |
| Mean, μ: | 3.63125 |
| Variance, σ2:  | 0.2233984375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (4 - 3.63125)2 + ... + (3.5 - 3.63125)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 17.871875 |
|  |
| 80 |

 |
| =  | 0.2233984375 |

|  |  |
| --- | --- |
| σ =  | √0.2233984375 |
| =  | 0.47265043901387 |

*Contingent Reward*
Standard Deviation, σ: 0.38929774514502

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 237.75 |
| Mean, μ: | 2.971875 |
| Variance, σ2:  | 0.151552734375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (2 - 2.971875)2 + ... + (3 - 2.971875)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 12.12421875 |
|  |
| 80 |

 |
| =  | 0.151552734375 |

|  |  |
| --- | --- |
| σ =  | √0.151552734375 |
| =  | 0.38929774514502 |

*Management-by-Exception (Active)*

Standard Deviation, σ: 0.33773140215266

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 210 |
| Mean, μ: | 2.625 |
| Variance, σ2:  | 0.1140625 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (2 - 2.625)2 + ... + (2.75 - 2.625)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 9.125 |
|  |
| 80 |

 |
| =  | 0.1140625 |

|  |  |
| --- | --- |
| σ =  | √0.1140625 |
| =  | 0.33773140215266 |

 *Management-by-Exception (Passive)*

Standard Deviation, σ: 0.26626760505176

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 167.5 |
| Mean, μ: | 2.09375 |
| Variance, σ2:  | 0.0708984375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (2 - 2.09375)2 + ... + (2 - 2.09375)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 5.671875 |
|  |
| 80 |

 |
| =  | 0.0708984375 |

|  |  |
| --- | --- |
| σ =  | √0.0708984375 |
| =  | 0.26626760505176 |

*Laissez Faire*

Standard Deviation, σ: 1.3345762436069

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 61 |
| Mean, μ: | 0.7625 |
| Variance, σ2:  | 1.78109375 |

**Steps**



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (4 - 0.7625)2 + ... + (4 - 0.7625)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 142.4875 |
|  |
| 80 |

 |
| =  | 1.78109375 |

|  |  |
| --- | --- |
| σ =  | √1.78109375 |
| =  | 1.3345762436069 |

*Mean and SD for UA employees’ Rating of Their Overall Job Satisfaction*

*Supervision*

Standard Deviation, σ: 2.680485030736

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1816 |
| Mean, μ: | 22.7 |
| Variance, σ2:  | 7.185 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (24 - 22.7)2 + ... + (24 - 22.7)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 574.8 |
|  |
| 80 |

 |
| =  | 7.185 |

|  |  |
| --- | --- |
| σ =  | √7.185 |
| =  | 2.680485030736 |

*Operating Conditions*

Standard Deviation, σ: 2.0585188850239

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1060 |
| Mean, μ: | 13.25 |
| Variance, σ2:  | 4.2375 |

**Steps**



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (22 - 13.25)2 + ... + (14 - 13.25)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 339 |
|  |
| 80 |

 |
| =  | 4.2375 |

|  |  |
| --- | --- |
| σ =  | √4.2375 |
| =  | 2.0585188850239 |

*Contingent Reward*

Standard Deviation, σ: **1**

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1280 |
| Mean, μ: | 16 |
| Variance, σ2:  | 1 |

**Steps**



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (17 - 16)2 + ... + (15 - 16)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 80 |
|  |
| 80 |

 |
| =  | 1 |

|  |  |
| --- | --- |
| σ =  | √1 |
| =  | 1 |

*Coworkers*

Standard Deviation, σ**:**3.110365734122

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1782 |
| Mean, μ: | 22.275 |
| Variance, σ2:  | 9.674375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (24 - 22.275)2 + ... + (23 - 22.275)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 773.95 |
|  |
| 80 |

 |
| =  | 9.674375 |

|  |  |
| --- | --- |
| σ =  | √9.674375 |
| =  | 3.110365734122 |

*Nature of Work*

Standard Deviation, σ: 2.5531536871093

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1749 |
| Mean, μ: | 21.8625 |
| Variance, σ2:  | 6.51859375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (24 - 21.8625)2 + ... + (23 - 21.8625)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 521.4875 |
|  |
| 80 |

 |
| =  | 6.51859375 |

|  |  |
| --- | --- |
| σ =  | √6.51859375 |
| =  | 2.5531536871093 |

*Communication*

Standard Deviation, σ: 1.7849632349155

|  |  |
| --- | --- |
| Count, N: | 80 |
| Sum, Σx: | 1683 |
| Mean, μ: | 21.0375 |
| Variance, σ2:  | 3.18609375 |

Steps



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| σ2 =  |

|  |
| --- |
| Σ(xi - μ)2 |
|  |
| N |

 |
| =  |

|  |
| --- |
| (24 - 21.0375)2 + ... + (22 - 21.0375)2 |
|  |
| 80 |

 |
| =  |

|  |
| --- |
| 254.8875 |
|  |
| 80 |

 |
| =  | 3.18609375 |

|  |  |
| --- | --- |
| σ =  | √3.18609375 |
| =  | 1.7849632349155 |