

The Impact of Transformational Leadership on Product and Process Innovation: A Study of the Jordanian Banking Sector.

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Abstract

Today, the fast changes in the business environment are rising because of the global challenges facing the banking sector (Jyoti and Dev, 2015). The banking sector is being forced by these changes to be more innovative to achieve goals and survive (Cheung and Wong, 2011; Pieterse et al., 2010). Moreover, the crucial concern for managers these days is how they can increase the innovative behaviour among their employees, as innovation has become vital for the organisation to survive and the main key to achieving competitive advantage (Han et al., 2016). In academia, scholars were concerned with recognising the aspects that motivate and sustain innovation (Damanpour and Schneider, 2006). Leadership style has been found to be one of the fundamental aspects that impact innovation positively or negatively (Bojica and Fuentes, 2012; Mittal and Dhar, 2015).

This study aims to investigate the impact of transformational leadership (TL) on employees' innovation (I) by integrating knowledge sharing (KS) and interpersonal trust (IT) as mediator factors within the Jordanian banking sector. Many studies have distinguished the relationship between transformational leadership and innovation. However, there is a lack of empirical studies on this topic in developing countries like Jordan. Jordanian Banks are deemed relatively weak in innovation (Salaymeh, 2013). Moreover, Hui et al. (2018) stated that there is a lack of empirical research between interpersonal trust and specific aspects of innovation, such as product and process innovation.

A quantitative approach was taken; a total of 627 questionnaires were distributed, of which 588 were filled out and returned, making the response rate 93.77%. However, data

screening confirmed the validity of 418 responses to examine the casual relationship among transformational leadership, knowledge sharing, interpersonal trust, and innovation. This study employed structural equation modelling (SEM) with Amos v. (23) to test the proposed hypothesis. According to the study's findings, transformational leadership and product or process innovation are significantly related. In addition, transformational leadership and knowledge sharing have a significant association. Also, the relationship between transformational leadership and interpersonal trust is positively correlated. However, interpersonal trust and knowledge sharing failed to significantly influence product and process innovation. Therefore, the mediation role was not supported for both mediators.

This research develops and implements many literary contributions. The findings of this study also provide a greater understanding of the relationships between the different variables in this study in the banking sector within a developing country. More precisely, the Jordanian banking sector. These relationships (transformational leadership and product and process innovation) have not been studied or tested in the banking sector previously, particularly in developing countries like Jordan, except for a handful of studies from Lebanon and Iraq. The current study takes this argument further to redress this research gap.

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List of Abbreviation

Abbreviation	Full term
TL	Transformational leadership
INN	Innovation
KS	Knowledge sharing
IT	Interpersonal trust
II	Idealised Influence
IM	Inspirational Motivation
IS	Intellectual Stimulation
IC	Individualised Consideration
KM	Knowledge Management
KMs	Knowledge Management systems
PD	Product
PC	Process
EFA	Exploratory Factor analysis
CFA	Confirmatory Factor analysis
SEM	Structural Equation Modelling
SPSS	Statistics Predictive Analytics Software
AMOS	Analysis of Moment Structures
MBE-A	management by exception (active)
MBE-P	management by exception (passive)
HR	Human resources

MLQ	Multifactor Leadership Questionnaire
CB-SEM	covariance-based
VIF	Variance Inflation Factor
Std	standard deviation
CR	Composite Reliability
AVE	Average Variance Extracted
α	Cronbach alpha
MENA	Middle East and North Area
PCA	Principal Component Analysis
KMO	Kaiser-Mayer-Olkin
χ^2	Chi-square
FL	Factor Loading
MLE	Maximum Likelihood Estimation
CFI	Comparative Fit Index
TLI	Tucker Lewis Index
RMSEA	Root Mean Square Error of Approximation
R^2	Item squared multiple correlation
MI	Modification Indices

Chapter 1: Introduction

This research aims to investigate the impact of transformational leadership (TL) on employees' innovation (INN) by integrating knowledge sharing (KS) and interpersonal trust (IT) as mediator factors within the Jordanian banking sector. Many studies have recognised the relationship between transformational leadership and innovation and established that transformational leadership plays an important role in fostering innovation in organisations. Being innovative in terms of product or process, as well as embracing transformational leadership in organizations, is critical in today's competitive environment. To achieve a competitive advantage within the industry against competing organisations, innovative products/processes can help in sustaining and staying relevant at the same time. The paramount importance of being innovative has urged researchers to explore this in various industrial, educational, and economic contexts. Rasheed et al. (2021); Le and Lei (2019), for example, investigated these concepts in scenarios in developing economies, whereas Prasad and Junni (2016) and Garci'a-Morales et al. (2012) investigated them in developed economies. While exploring these concepts in various economies, different industrial contexts were explored, such as education,

telecommunications, etc. While exploring the context of developing countries, the focus of the studies has mostly been on flourishing sectors such as education, information technology, and aviation. The banking sector in developing countries such as Jordan still lacks substantial research on exploring innovation and TL. Jordanian banks are deemed relatively weak in innovation (Salaymeh, 2013), and adopting TL to be innovative toward product and process approaches may play an important role in uplifting the economic strength of this sector. Hui et al. (2018) have also stated that there is a lack of empirical research between interpersonal trust and specific aspects of innovation as well as between KS and innovation (Le and Le, 2021; Al-Husseini et al., 2019). Further exploration of these concepts and their interrelationships can support and increase innovative capabilities.

The next section presents the research background and describes the relevance of the study in context. Indeed, the context aids in painting a broad picture of the study variable. Following the research background, this chapter further addresses the research gap, the importance of the study, the aims and objectives of the study, and the research questions. The chapter concludes by providing the structure of the thesis.

1.1 Background of the Study

Today, the fast changes in the business environment are rising because of the global challenges facing the banking sector (Jyoti and Dev, 2015). The banking sector is being forced by these changes to be more innovative to achieve goals and survive (Cheung and Wong, 2011; Pieterse et al., 2010). Moreover, the crucial concern for managers these days is how they can increase the innovative behaviour among their employees, as innovation has become vital for the organisation to survive and a main key to achieving competitive advantage (Han et al., 2016). In academia, scholars were concerned with

recognising the aspects that motivate and sustain innovation (Damanpour and Schneider, 2006). Leadership style has been found to be one of the fundamental aspects that impact innovation positively or negatively (Bojica and Fuentes, 2012; Mittal and Dhar, 2015). Also, transformational leaders have a significant impact on different key outcomes of firms, for example, organisational justice and trust (Le & Lei, 2017); product and process innovation (Birasnav et al., 2013; Al-Husseini et al., 2019); and organisational performance (Garcia-Morales et al., 2008).

Different styles of leadership have been studied. In particular, transformational leadership has been closely related to employees' innovation. Transformational leaders may inspire subordinates to go beyond their abilities in providing a better way of completing their tasks and solving problems (Cheung and Wong, 2011). Research shows that transformational leadership is the most common style in the literature that is linked to innovation (Michaelis et al., 2010; Zheng et al., 2016; Alnesr and Ramzani, 2019). Furthermore, TL plays a crucial role in developing the process, structure, and climate for organisations to become innovative (Yukl, 2013; Chan et al., 2014). This style of leadership enhances the team attitude and spirit between employees, which in turn improves the generation of new ideas (Zheng et al., 2016). Researchers like Herrmann and Felfe (2013) noted that practising TL can motivate members to perceive the new assignment as a challenge that may enhance members' creativity and develop a creative business environment.

Bass and Riggio (2012) considered TL as the fuel for innovation when fostering idealised influence (II), inspirational motivation (IM), intellectual stimulation (IS), and individualised consideration (IC) among the organisation's employees. However, leaders who practise idealised influence articulate the organisation's mission and vision by promoting confidence, honour, appreciation, and pride in employees. Guay (2013) illustrates that the

behaviour of transformative leaders is admired, respected, and trusted. Limsila and Ogunalwa (2008) argue that such leaders, rather than focusing on their own interests, put their followers' needs first and share success and risk with them. Bruch and Walter (2007) argue that such leaders have a clear vision and a sense of purpose, and they operate in line with their deeply held values and beliefs.

Leaders, who adopt inspirational motivation would focus on enhancing employees' commitment to the organisation's vision by motivating their employees. This can be achieved by providing meaning and challenges to their employees' work and improving collaboration between leaders and followers. In this process, leaders inspire their followers to develop a vision for the future (Shah et al., 2020). By creating positive expectations about what needs to be done and fostering responsibility for the common objective, such leaders enable colleagues to anticipate the future (Northouse, 2021). As argued by Bass and Riggio (2006), inducing inspiration in employees may be significantly useful in boosting their followers' self-confidence in their ability to achieve organisational goals. Such leaders hold their people to a high standard, speak with optimism and enthusiasm, and explain their work (Bacha, 2014). Leaders who adopt intellectual stimulation encourage their followers to experiment with new and innovative methods and evaluate their current expectations. Intellectual stimulation improves the followers' imaginations and encourages them to solve problems. Such leaders can improve their followers' creative ideas and support them in building a knowledge bank to obtain a competitive advantage (DuBrin, 2015).

When leaders practise individualised consideration, they understand and share the concerns of others, and they treat each person as an individual. Leaders take on the role of coaches, elevating the needs of their followers and assisting them in being fully realised

(Lynch, 2012). In addition, taking care of the requirements of the followers and recognising their skills are vital to increasing their performance and enhancing knowledge sharing (Avolio and Bass, 2002). This concept entails considering a follower's abilities and maturity level while assessing their capabilities for potential growth and improvement (Bass and Riggio, 2006). Followers are expected to think differently, ask questions, and enhance their beliefs and expectations in practice. Leaders help and motivate their followers to look differently at their difficulties, provide new methods to complete the task, and look for innovative ways to solve workplace challenges (Shah et al., 2020).

Knowledge and knowledge sharing (KS) are significantly important resources and capabilities that support achieving competitive advantage and are considered a vital point in improving innovation (Von Krogh et al., 2012). It enhances an organization's efficiency and inventiveness and decreases risks and expenses (Islam et al., 2015). In addition, organisations must manage knowledge to improve efficiency and survival chances (Ahmed and Shepherd, 2010). Knowledge management and knowledge have become increasingly important in the study of organisational innovation (Von Krogh et al., 2012). Also, it is critical to establish a KS culture while considering the implementation of KM activities (Hislop, 2013; Abbas & Kumari, 2021). Researchers indicate that by practising the KM process in general and KS in specific, organisations enable themselves to create new chances to engender innovative ideas and enhance innovation (Ugwu et al., 2018; Rajabion et al., 2019). Previous research on the link between KS and innovation capability has confirmed the importance of KS in supporting and increasing innovative capabilities (Le and Le, 2021; Al-Husseini et al., 2021; Nurahmad et al., 2021).

Considering KM and promoting KS in organisations is very important, as it helps in changing tacit knowledge that is implanted within employees into explicit knowledge (Von Krogh et al., 2012). To improve the innovation and performance in organisations,

transformational leadership can be a determinant for knowledge sharing and innovation, as this style of leadership can lead to goal-directed behaviour shown by followers (Bass and Riggio, 2012; Nurahmad et al., 2021). Several publications in the popular management press have highlighted the consequences of the effect of trust in leadership on followers' actions (Kouzes & Posner, 2008; Mulder, 2009; Covey & Link, 2013; Legood et al., 2021). Also, researchers like Colquitt et al. (2007) highlighted the consequences in their meta-analysis of 132 independent samples and summarised the relationship between the trust variables and both risk-taking and job performance. Hence, trust is essential for supporting the effectiveness of individuals and organisations.

Trust is also an important factor in the relationship between leaders and followers and how they act toward each other (Legood et al., 2021). There is no exception to the relationship between leaders and followers. When followers trust their leaders, they readily discuss their ideas and actions with them without fear of being abused, as the leaders are heavily interested in supporting and listening to their followers' ideas (Mayer et al., 1995). Additionally, damage to trust can lead to undesirable consequences such as low engagement, high turnover, and reduced innovation (Dirks & Ferrin, 2002). Trust in leaders is a reflection of successful leadership strategies. Employees' perception of a leader's character and behaviour helps in the development and maintenance of employee trust (Bennis, 2002; Bligh, 2017). The main role of trust is not only focusing on gaining success and competitive advantages, but it is also at the core of relationships and has an impact on individuals' behaviour (Legood et al., 2021).

1.2 Research Gap

Within developing countries like Jordan, the banking sector is facing challenges caused by rapidly changing economic and technological advancements. Being innovative could be a solution to keeping pace with these changes. The banking sector in Jordan plays an important role in supporting the developing economy and its growth (Al-Abedallat, 2017).

Despite the recent crises, such as the global financial crisis and the Arab spring (2011), and COVID-19, the banking sector in Jordan has managed to benefit from capitalisation and highly regulated flexibility, maintaining expansion and growth (Al-Abedallat, 2017).

The banking sector is chosen for this research as it has become one of the important pillars that support the country's economy by fostering stability and enhancing economic growth (Al-Fayoumi & Abuzayed, 2009). The achievements of the banking sector have contributed towards realising financial and social stability in Jordan (Association of Banks in Jordan, 2007). Despite current growth, Jordanian banks are deemed relatively weak in creativity and innovation; hence, Salaymeh (2013) pointed towards exploring the Jordanian banking sector regarding innovation.

Furthermore, many researchers have distinguished the relationship between TL and innovation (Fontana & Musa, 2017; Zheng et al., 2016). Unfortunately, there is a lack of empirical research in developing countries on TL and IN. This study applies the theory of TL to support the formulation of relationships and hypotheses, which will be examined and tested in the later stages of this research. Additionally, numerous studies have also noticed a positive effect of transformational leadership on innovation (Jyoti & Dev, 2015; Mittal & Dhar, 2015; Al-Husseini et al., 2019). Hui et al. (2018) stated that there is a lack of empirical research between interpersonal trust and specific aspects (product and

process) of innovation. TL has not yet been examined in relation to KS and IT toward innovation within the Jordanian banking sector (Masa'deh et al., 2016; Hui et al., 2018). After a comprehensive examination of the literature and to the best of the researcher's knowledge, this study is one of the first few to examine these explicit relationships together in the Jordanian banking sector. Thus, this analysis found an insufficiency of empirical research on the connection between TL, KS, IT, and innovation and aims to contribute toward this branch of literature. Thus, this study seeks to address the following primary question while addressing this gap in the literature: ***"What is the impact of transformational leadership on product and process innovation by integrating the roles of knowledge sharing and interpersonal trust as mediators?"***

1.3 The importance and purpose of the study

The significance of this study rests in its contribution to both theory and practice. The study investigates the influence of TL on innovation in the Jordanian banking sector by using knowledge sharing and interpersonal trust as mediator factors. The study enhances and highlights the relevance of the links between TL, KS, IT, and innovation from a theoretical standpoint in the banking industry, particularly in developing countries like Jordan, where these relationships have not been investigated to the best of the researcher's knowledge.

This study contributes to our understanding of the relationship between TL and innovation and redresses the research gaps regarding follower's awareness of the leader's and other group members contributions, which eventually has an impact on strengthening the impact of TL (Al-Husseini & Elbeltagi, 2016). Addressing and considering follower's contribution reinforces leader's ability to motivate and encourage their subordinates which

eventually leads to effective organisational leadership. Broader aspects of TL which includes its various characteristics such as (idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration) develops our understanding on significant impact that TL may have on product and process innovation. As a result, these innovative TL practices further lead towards fortifying employee's innovative capabilities which eventually leads to favourable organisational outcomes. These contributions suggest taking a leap from standard leadership style and embrace Transformational leadership style to induce innovation and developmental abilities in employees, subordinates, and the entire organisation eventually.

Moving forward, this study also reinforces the positive relationship between TL and KS, where TL and its broader characteristics provides appropriate atmosphere to foster KS organisation wide. Adopting TL promotes in establishing a work environment that encourages knowledge sharing by inspiring people, establishing the procedures and structures necessary for knowledge sharing to begin within firms, and developing a shared vision (Salo, 2009; Shi, 2010). Similar findings were reported to reinforce the relationship between TL and IT, where implying TL can promote and encourage interpersonal trust between employees. However, the KS and IT do not influence product/process innovation, regardless these variables contribute towards building valuable social capital.

There are a few key elements to consider in order to attain the essential competitive advantages and continue to innovate: the first is the link between TL, KS, IT, and innovation. TL is recognised for establishing and stimulating powerful impacts through a range of activities that improve followers' awareness of the contributions of additional members of the team (Bass & Riggio, 2012). Transformational leaders have the capability

of fostering the right atmosphere, establishing principles and rules, and fostering a change-oriented culture. Those who can encourage a common vision, which will drive creativity (DuBrin, 2015; Northouse, 2021). As a result, it will be beneficial to have a deeper knowledge of the connections between TL, KS, IT, and innovation, as well as to discover techniques that leaders may use to encourage KS activities among workers.

Secondly, the KS and IT's mediating functions in the interaction between TL and innovation. KS is well acknowledged to be a major problem for fostering innovation (Hislop, 2013). Consequently, innovation may be fostered by transformative leaders who create a KS culture among institutional members. Furthermore, IT was observed to have a beneficial impact on the ability to innovate. Indeed, trust increases the quality of information transmission, supports core capacity growth, encourages reciprocal learning, and motivates creativity in social relationships (Murphy, 2002).

As a result, by expanding the library of theoretical relationships in the banking industry in developing countries, this research contributes to the existing literature in the fields of TL, KS, IT, and innovation.

From a practical point of view, this study introduces comprehensive recommendations for leaders within the Jordanian banking sector. These recommendations suggest that to improve and enhance innovation, the leaders may promote transformational leadership more intensely and also foster a culture of knowledge sharing and interpersonal trust to achieve a higher level of innovation.

1.4 Aims and Objectives of the Study

This research aims to investigate the impact of TL using the main four behaviours (idealised influence (II), inspirational motivation (IM), intellectual stimulation (IS), and individual consideration (IC)) on employees' innovation (INN) (product (PD), and process (PC)) in the Jordanian banking sector by integrating (KS) and (IT) as a mediating factor.

Research objectives

- To evaluate the impact of Transformational leadership on product and process innovation in Jordan's banking sector.
- To evaluate the impact of Transformational leadership on Knowledge Sharing which further impacts on product and process innovation in the Jordanian banking sector.
- To evaluate the impact of Transformational Leadership on Interpersonal Trust which further impacts on product and process innovation in the Jordanian banking sector.
- To examine the mediation impact of Knowledge Sharing and Interpersonal Trust on the Transformational Leadership -innovation relationship in the Jordanian banking sector.

1.5 Study Questions

The research questions are drawn from the study's major contributions and address a vacuum in the literature caused by a lack of studies on TL, KS, IT, and innovation in Jordan's banking sector. The key research question is as follows: "*What is the impact of transformational leadership on product and process innovation when integrating*

knowledge sharing and interpersonal trust as mediating factors within the Jordanian banking sector?"

This sets the following questions, whose answers provide essential information with which to answer the main question:

- 1- What is the effect of transformational leadership on product and process innovation within the Jordanian banking sector?
- 2- What is the effect of transformational leadership on knowledge sharing within the Jordanian banking sector?
- 3- What is the effect of knowledge sharing on product and process innovation within the Jordanian banking sector?
- 4- What is the effect of transformational leadership on interpersonal trust within the Jordanian banking sector?
- 5- What is the effect of interpersonal trust on product and process innovation within the Jordanian banking sector?
- 6- Does knowledge sharing mediate the relationship between transformational leadership and innovation within the Jordanian banking sector?
- 7- Does interpersonal trust mediate the relationship between transformational leadership and innovation within the Jordanian banking sector?

1.6 Structure of the Thesis

This section provides an overview of the thesis' topics; the thesis is divided into seven chapters. **Chapter one** presents the introduction of the chapter, the background of the study, the research gap, the importance of the study, the aims and objectives, the research questions, and finally the structure of the overall thesis.

Chapter Two: This chapter provides a comprehensive review of the literature on leadership concepts and mainly focuses on transformational leadership's four characteristics, the significance of transformational leadership, and why transformational leadership. Next, discuss the knowledge, knowledge sharing, the importance of knowledge sharing, and why knowledge sharing. Following, discussing interpersonal trust and its importance. Finally, several forms of innovation are examined in this research.

Chapter Three conceptualises the causal link in this study between transformational leadership, knowledge sharing, interpersonal trust, and innovation. The link between transformational leadership and innovation, transformational leadership and knowledge sharing, knowledge sharing and innovation, transformational leadership and interpersonal trust, interpersonal trust and innovation, and finally the function of knowledge sharing and interpersonal trust as mediating factors in the transformational leadership-innovation relationship are all covered. Following a review of each element of the conceptual framework, the study's hypotheses are presented.

Chapter Four: The methodology chapter provides an overview of the research paradigm, research process, and ethical guidelines followed in this study. Moreover, describe the quantitative methods and discuss the questionnaire survey, measurement scale, and data collection. Describe the procedures used to validate the questionnaire.

Chapter five: This chapter reports the descriptive results. In particular, this chapter presents and discusses the survey response analysis, the data screening, and the preliminary analysis, i.e., missing data, unengaged responses, outliers, data normality, multicollinearity, and bias checking. Finally, the demographic information of the respondents was examined, and exploratory factor analysis (EFA) was performed using SPSS version 26.

Chapter six presents the empirical findings of this study. The study adopted a two-step methodology to analyse the data. Confirmatory factor analysis (CFA) was used to assess reliability and validity. Then structural equation modelling (SEM) was used to test the hypotheses using IBM SPSS AMOS V.23 statistical software.

Chapter seven presents a discussion of the study's findings and links them with the previous literature. Furthermore, this chapter is divided into the following seven sections: section one, discuss the levels of Transformational leadership, knowledge sharing, interpersonal trust and innovation within the Jordanian banking sector as reported by respondents; section two, discuss the first objective of this study (the impact of Transformational leadership on product and process innovation in Jordan's banking sector); section three, discuss the second objective of this study (the impact of transformational leadership on knowledge sharing in Jordanian banking sector); section four, discuss the third objective of the study (the impact of transformational leadership on interpersonal trust in Jordanian banking sector); section five, discussed the fourth objective of this study (to evaluate the impact of knowledge sharing on product and process innovation in Jordanian banking sector); section six, discuss the (interpersonal trust and product and process innovation); section seven, discuss the mediation role by knowledge sharing and interpersonal trust.

Chapter eight conveys the study's findings. It provides a summary of the study's results and discusses how they relate to principles and application. also provides guidance to decision-makers and banking sector executives. Furthermore, provide the limitations of this study and suggestions for future studies.

Chapter 2: Literature review

2.1 Introduction

This chapter provides a literature review, which is divided into four sections. The first section discusses leadership style definitions and its importance, as well as leadership theories, with a focus on transformational leadership (TL). The second section then goes through the fundamental principles of knowledge, types of knowledge, knowledge management (KM), and the importance of knowledge sharing (KS). Following that, section three of this chapter discusses the notion of interpersonal trust (IT) and its significance. Finally, the fourth section of this chapter discusses the importance of innovation, the types of innovation, and the reason for this study's focus on product and process.

2.2 Leadership style

2.2.1 Leadership concept

Leadership is one of the most discussed topics in the world and yet it is a concept that is very difficult to define (Silva, 2016). Stogdill (1974, p.7) states that “there are almost as many different definitions of leadership as there are people who have attempted to define the concept”. At the turn of the century, Bennis and Townsend (1995) estimated that there were at least 650 definitions of leadership within the literature. However, Meng (2016) notes that at the beginning of the 20th century, scientific theories on leadership began to

emerge. There has been a growing interest in issues related to the workplace, and leadership behaviour has been found to be an important key to organisational success (Grobler & Du Plessis, 2016).

Individuals who have strong leadership abilities are a necessity in present day organisations. It was noted by Northouse (2007) that individuals provide value to their organisations and help improve their performance. Schermerhorn (2008) notes that decent leadership entails the skills to make changes in response to environmental pressures. Moreover, good leadership shows a vital role in solving an organisation's problems (Yukl, 2013). Yukl and Mahsud (2010) emphasised the impact of good leadership on organisational performance, pointing out that leaders who can anticipate future actions and environmental changes will lead their organisation to success. Furthermore, the most important tasks that leadership are responsible for in firms are to establish high performance and to improve the organisational performance (Bertocci, 2009). Mittal and Dhar (2015) note that one of the most critical elements impacting the positive or negative effects of innovation has been identified as leadership style. According to Silva (2016), as mentioned before, there is no agreement on one specific leadership definition. Thus, table (2.1) presents the definitions of leadership.

Table 2.1 Previous Definitions of Leadership.

Scholar	Definition
Burns, 1978	Leadership is utilised when a collection of people combine their political, financial, and other resources to develop, engage, and achieve the goals of their subordinates.
Yukl, 1981	Leadership involves effective acts that impact the performance of followers.
Daft, 1999	Leadership is defined as an effective partnership between leaders and followers with the goal of bringing about changes that reflect their common goals.
Robbins & Coulter, 2005	Leadership is a process that combines both personal and team influences in order to achieve a company's objectives.
Schermerhorn, 2008	Leadership is the process of motivating others to work hard to fulfil their duties.
Northouse, 2007-2012	The leadership process inspires a group of people to achieve a set of objectives.
Yukl, 2013	Leadership is demonstrated as a quality, actions, impact, or interaction between superiors and subordinates, or the function of a managerial position's relationship.
Rosari, (2019)	Leadership is the influence relationship among leaders and followers who seek actual changes that represent their common goals.

As shown in the above table, leadership is a process wherein leaders influence and are in turn influenced by their followers. Thus, this process is seen as a requirement for leadership. Leadership involves the persuasion of followers to support the leader's goals and objectives, and also entails keeping track of a certain group of individuals in order to attain specified objectives.

Daft and Pirola-Merlo (2009) highlight the six main factors behind the leadership process, with a view to offer a proper picture of what leadership is (see Figure 2.1).

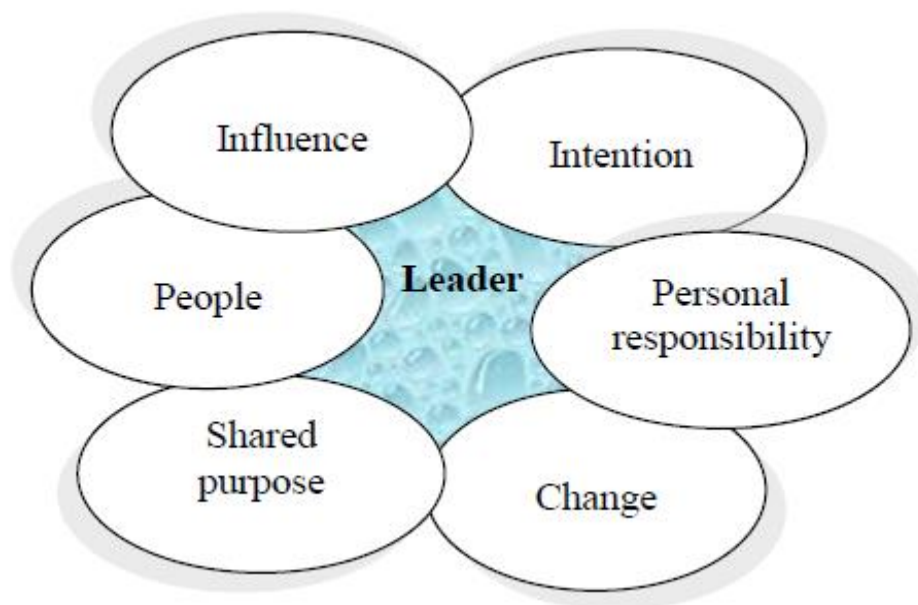


Figure 2.1 What leadership involves (Daft and Pirola-Merlo, 2009).

Individuals who have the ability to influence others are referred to as leaders. In contrast, individuals who have been directed by leadership are called followers. Nevertheless, leaders and followers are both involved in and connected by the leadership process (Northouse, 2007).

There are common issues with the concept of leadership and management, as demonstrated by the lack of unanimity in the work of leadership scholars. Thus, it is useful to distinguish between these two concepts and take into consideration the related issues. Management, as noted by Bennis and Nanus (1985), refers to the accomplishment of tasks, activities, and primary routines, whereas leadership is concerned with the development of a vision towards change and impact. The contrast between management and leadership was further highlighted by Kotter (1990): Financial planning, coordinating, employing, regulating, and problem-handling are all ways in which management creates order and consistency. Meanwhile, via strategic planning, aligning people, while also encouraging and inspiring them, leadership creates change and movement. Leadership, according to DuBrin (2015), is concerned with the interpersonal characteristics of a leader's role, such as transformation and inspiration, inspiration, and encouragement, whereas the activities of planning, organising, and regulating are concerned with the administrative aspects of the role.

Despite the fact that management and leadership deal with separate tasks, it is believed that both are necessary for an organisation's success (Northouse, 2007). Thus, leaders who participate in planning, coordinating, and directing are equally active in management as much as managers are focused on persuading a group to achieve their objectives and practise leadership.

2.2.2 The Bass theory of transformational and transactional leadership (Transformational leadership and transactional leadership)

When Burns (1978) first described political leaders, he established the concepts of transformational and transactional leadership. Transformational leadership has been defined in several papers (Lynch, 2012; Yukl, 2013) as a process in which leaders and followers are linked and encourage and motivate one another to achieve greater heights. The process also distinguishes between transactional and transformational leadership styles.

Transactional leadership focuses on the reciprocity that occurs between leaders and followers. Transformational leadership, on the other hand, refers to a partnership between leaders and their followers in which each side may influence the other's perceptions and behaviours. Furthermore, transformational leadership focuses on the emotions of followers and on aiding them to achieve their prospective goals (Dubrin, 2015).

At the same time that Burn's theory was being presented, House (1976) offered a charismatic leadership theory. House's theory focuses on leaders with a unique type of charisma that impacts their followers as well as their own methods of influencing them. Furthermore, charismatic leaders, according to House (1976), exhibit unique behaviours. First, leaders serve as strong role models for their followers, encouraging them to accept their ideas. Second, they demonstrate to their followers that they are efficient. Finally, they aim to support and enhance the confidence of their followers to help them meet the high expectations the leader sets for them.

Charismatic leaders, according to House's theory, have a direct influence on their followers. This is realised through followers having faith in their leaders, whereby through this newly gained trust, they can achieve the goals set for them due to heightened confidence. Similarly, by setting high expectations, followers are instilled with the belief that they can achieve, at times, unachievable objectives.

Burns' Theory of Transforming Leadership in Leadership and Performance Exception was expanded into the concept of transformational leadership (TL) by Bass (1985) in the mid-1980s by concentrating on followers' needs rather than the leader's needs (Yukl, 2013). Furthermore, regarding House's theory, Bass placed a greater emphasis on the emotional aspects of charisma, indicating that charisma is a crucial feature but not a sufficient prerequisite for TL on its own (Northouse, 2007). Transactional leadership and transformational leadership are all part of the theory, which will be discussed in the following sections.

2.2.2.1 Transactional leadership

Transactional leadership refers to the flow of information between leaders and followers (Sunarsi et al., 2021). This flow requires a leader to clarify what is required of the followers, as well as the necessary conditions and incentives. As a result, it assumes that followers are driven by two systems. Firstly, a reward system, such as financial incentives and promotions; second, a punishment system. This system will ensure improved behaviour and make clear the level of expectations required from an individual to achieve the set goals (Avolio & Bass, 2002; Bass & Riggio, 2006).

To comprehend transactional leadership, it is necessary to first review the four characteristics: contingent rewards, management by exception (active) (MBE-A), management by exception (passive) (MBE-P), and laissez-faire leadership. Contingent

rewards, as explained by Bass (1990) is the trade mechanism through which followers' efforts are traded for particular advantages between leaders and their followers. Management by exception (active) is when a leader ensures his employees' performance and guides them as needed, thus ensuring that the task is completed with maximum effectiveness. Furthermore, a leader assists an employee in focusing on any discrepancies or inaccuracies in their job. According to Bass and Avolio (2002), a leader who actively manages by exception is one who focuses on issues such as errors, where one may help employees deal with such failings, grievances, or setbacks. To do this, such a leader continuously reminds them of their mistakes in order to motivate them to reach a certain level. Leaders try to modify their activities according to the circumstances by taking corrective actions so that this is effective in the long run. These corrective actions may be detrimental in the short term but beneficial in the long run.

Additionally, some leaders may adopt a reactive approach. Leaders who embrace this style of leadership generally wait for mistakes to occur first. As a result of only receiving feedback on mistakes, the relationship between employee and leader is strained. Passive management by Exception, according to Bass and Avolio (1994), is a reactive management approach, also known as the putting-out-fires approach, and only requires a reaction from the leader when something goes wrong (Barbuto & Brown, 2000; Bass & Riggio, 2012). Finally, the laissez-faire leadership style emerges when there is a lack of leadership and when leaders "abdicate responsibility and avoid making decisions" (Bass, 1990, p. 22). Skogstad et al. (2014) support Bass's view, arguing that in this style, leaders essentially ignore their leadership responsibilities and avoid making choices; followers therefore do not receive feedback from leaders in this manner. Additionally, Northouse (2007) notes that leaders also avoid interfering when critical issues arise. Thus, leaders make little effort to help followers meet the job requirements.

2.2.2.2 Transformational leadership

The other extreme of the leadership continuum is transformational leadership. Transformational leaders are those leaders who motivate and inspire their people to achieve high results while also developing their own leadership skills. This is achieved by reacting to individual followers' needs, empowering them, and connecting the aims and goals of individual followers, the leader, the group, and the wider organisation (Bass & Riggio, 2006; Yukl, 2013; Busari et al., 2019). Transformational leaders enable followers' growth, facilitating their development into leaders (Bass & Riggio, 2006). The theory is built on the belief that a leader must be recognised, loved, appreciated, and trustworthy to gain followers' loyalty and that everyone has a different role to contribute (Yukl, 2013).

According to Schermerhorn (2008), this type of leadership may emerge among followers who are enthralled by their leader's ideas and views. Furthermore, transformational leadership inspires followers to become involved, resulting in more efforts and more inventive problem solutions (Saenz, 2011). TL focuses on the followers' significant reasons, ethical behaviour, the introduction of leaders and the sharing of a common mission and objectives (Bass & Riggio, 2006). As a result, transactional leadership prioritises immediate objectives. On the other hand, TL deals with feelings, principles, morals, and long-term objectives (Northouse, 2007).

Researchers have proposed a variety of behaviours for practising TL. Six distinct behaviours were described by Podsakoff et al. (1996, p.265): “articulating a vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, providing individualized support, and intellectual stimulation.” Moreover, another six distinct behaviours were proposed by Leithwood and Jantzi (2000, p.114): “building vision and goals, providing intellectual stimulation; offering individualised

support; symbolising professional practises and values; demonstrating high performance expectations; and developing structures to foster participation.” Additionally, according to Rafferty and Griffin (2004), there are six elements of transformational leadership, which are: vision, inspiring motivation, intellectual stimulation, supporting leadership, and personal recognition. Likewise, Betroci (2009) suggests that transformational leadership is an ability based on three different components: charisma, individual attention, and intellectual stimulation.

However, according to Bass and Riggio (2006–2012), four behaviours underpin transformational leadership, which, according to the study’s goals and objectives, were: idealised influence, inspiring motivation, intellectual stimulation, and individualised consideration.

Idealized influence is defined by charismatic role modelling, in which a transformational leader demonstrates personal devotion to company goals by leading by example (Afshari, 2021). Thus, the leader earns the respect, admiration, and trust of his or her followers. Idealised influence appears to be the most successful leadership style, with its capacity to acquire employees' trust in organisations. Subsequently, it may be investigated at a more granular level by splitting it into two elements: “idealised influence-attributed and idealised influence-behaviour” (Loon et al., 2012, p. 195). Moreover, idealised influence refers to the charismatic behaviour of transformational leaders, in which they convey belief in the organisation's vision (Northouse, 2007). Transformational leaders have the ability to persuade followers to collaborate with one another, which can improve followers' vision and feelings of mission (Saenz, 2011; Bass & Riggio, 2012).

Furthermore, transformational leaders that use this approach prioritise the needs of their followers before their own. They also divide the risk with their followers and do not use

their influence for personal benefits (Yukel, 2013). Leaders that make use of this style convey a sense of purpose and a high standard of morality and ethics. They can encourage individuals to support their cause of innovation and quality, which will help to reduce complexity (Bass & Riggio, 2006).

Inspirational motivation leaders aim to motivate their followers to become dedicated to the organisation's mission by inspiring them. They motivate their followers by offering significance and challenge in their job, and they urge members to focus on the organisation's goals (Avolio & Bass, 2002; Bass & Riggio, 2012). Through interactive communication, leaders with inspiring motivation strive to develop relationships with the rest of the team. They also urge followers to visualise appealing future states by supporting both individuals, building teamwork and cooperation between the team members, the identification of new possibilities, and inspire followers to anticipate appealing end goals (Shafi et al., 2020).

Bass and Riggio (2012) note that an inspirational motivational style can increase the motivation of followers by increasing their self-efficacy beliefs. Moreover, such leaders hold their people to high standards and speak positively and enthusiastically.

Intellectual stimulation puts the followers to the test in terms of creative thinking and finding a solution to a hard challenge (Khan et al., 2009). Furthermore, intellectual stimulation demonstrates a leader's ability to challenge followers to rethink their expectations in the first place, as well as motivate them to think creatively and innovatively through issue reformulation, intellectual curiosity, inventiveness, and unique ideas (Oke & Walumbwa, 2009). Such leaders understand that primary technique to gain superiority is through creativity and knowledge creation (Northouse, 2012).

Individualised consideration highlights the achievements, progress, support, and development of followers. Such leaders also teach and train their followers to take advantage of fresh learning opportunities and respect diversity (Khan et al., 2009). Furthermore, individualised consideration demonstrates the traits of the leader that contribute to the satisfaction of their subordinates through guiding, encouraging, and attending to their specific needs (Oke & Walumbwa, 2009). The ability to build and improve their followers' sense of resolve and confidence is one of the key talents that such leaders may bring to their followers (Bass & Riggio, 2012). Furthermore, a customised consideration approach is required while generating new learning opportunities in a helpful environment. Such leaders move about to handle management concerns, and they use personal challenges to aid organisational members to improve via delegation. Individual desires are taken into account by this style of leadership. Such leaders take care for the person as a whole, not just as a part of the organisation (Oke & Walumbwa, 2009).

2.2.2.2.1 Why transformational leadership?

Transformational leadership is usually regarded as the most admired leadership style (Garcia-Morales et al., 2012; Zheng et al., 2016; Al Ahmad et al., 2019). Individuals that practise transformational leadership typically encourage their colleagues via excellent communication and the creation of an intellectually stimulating workplace (Chan et al., 2019). These leaders, on the other hand, are frequently blue-sky thinkers, which indicates they are creative thinkers who may need the help of a large number of detail-oriented managers to achieve their strategic goals (McCleskey, 2014). Through collaboration and shared interest, managers work together to achieve a common objective (García-Morales et al., 2012).

Subsequently, transformational leadership alters the attitudes, personal behaviours, and tentativeness of a company's employees in order to foster a common mentality that helps the organisation achieve its goals (García-Morales et al., 2008). As a result, this leadership style is more likely to produce exceptional results than other leadership styles (Bass & Avolio, 1994).

According to Bass and Riggio (2012), transformational leadership may be found at all levels of an organisation and can be used in any setting. Also, by utilising transformational leadership, followers are encouraged to trust their leaders; thus, the performance of individuals will be impacted in a positive way (Ismail et al., 2010). Betroci (2009) notes that by practising transformational leadership, employees will have the resources and knowledge to improve their organisation's performance. Thus, their capacity to achieve will be increased. Furthermore, turning previous incidents and failures into a teaching tool is one of the main goals of leaders who practice transformational leadership (Avolio & Bass, 2002).

Transformational leadership, according to Bass and Riggio (2012), is useful during chaotic periods, like during times of fast evolutions around the world. Furthermore, TL strengthens the resolve to overcome problems and encourages the production of new ideas, which is the core of innovation (Rafferty & Griffin, 2004). Such leaders are always explaining the issue and assisting in preparation for future crises (Bass & Riggio, 2012). Chan et al. (2019) note that TL is the engine and spreader of creative ethos and information dissemination, resulting in the highest possible organisational performance. Transformational leadership may also enhance organisational learning and employees' innovation (De Jong & Hartog, 2007). Yukl (2013) states that leaders should use the transformational leadership style to encourage employees to participate in educational programmes and improve their abilities to achieve great performance. Leaders who use

transformational leadership can improve teamwork, organisational responsibility, and job satisfaction (Mohammad et al., 2011).

Transformational leadership has been shown to be positively connected to process and product innovation in private universities in Jordan, according to a survey of 173 academic staff in private institutions in Jordan's north (Elrehail et al., 2018). Another study (Al-Husseini & Elbeltagi, 2016) found that transformational leaders and their behaviours can stimulate creativity by creating an atmosphere of trust. Transformational leadership enhances employee creativity and has the power to influence an organisation's culture while also encouraging process and product innovation (Elrehail et al., 2018; Vaccaro et al., 2012; Alzawahreh, 2011).

Another study conducted by Al Ahmad et al. (2019) on the effect of transformational leadership on innovation investigated Lebanese banks, demonstrating the importance of transformational leadership in enhancing innovation in the banking sector. Moreover, this study showed that individualised consideration is the most important predictor for product and process innovation, followed by inspirational motivation and idealised influence, whereas intellectual stimulation has an insignificant influence on product and process innovation (Al Ahmad et al., 2019).

Transformational leaders may foster a helpful atmosphere between organisation members by developing communication channels, group cohesiveness, confidence, and knowledge sharing. They can also foster an environment and culture that encourages change (Nourthouse, 2012; Bass & Riggio, 2012; Avolio & Bass, 2002). Furthermore, transformational leaders strive to improve the performance and effectiveness of their organisations by improving productivity and exceeding expectations (Limsila & Ogunlana, 2008). TL's major focus is on social ideals and providing help in times of need

(Nourthouse, 2007). Such leaders help their subordinates develop their personal ideals and self-concepts, and they urge them to put the organisation's needs ahead of their own. Also, by producing a feeling of identity with a social level of support, stress will decrease among organisational members (Avolio et al., 2020). Leaders that embrace this approach are always attempting to focus on the organisational vision, goals, and culture through promoting member creativity and building connections (Saenz, 2011).

Despite the fact that several studies (Yang, 2007; Crawford et al., 2003; Laohavichien et al., 2009; Rui et al., 2010; Erkutlu, 2008) have examined a mix of transformational and transactional leadership, the bulk of them indicate that the former has a greater influence than the latter. Yang (2007), for example, discovered that transformational leaders communicate with their followers more than transactional leaders. Furthermore, Crawford et al. (2003) discovered that transactional leaders had a lower impact on employees' personal creativity than transformational leaders. Furthermore, Laohavichien et al. (2009) discovered that TL had a higher effect on infrastructure and quality management than transactional leadership in a study consisted of over a hundred managers operating in the US manufacturing industry. Furthermore, according to Rui et al. (2010), TL is required to increase quality. Transactional leaders, according to Erkutlu (2008), are less proactive and successful than transformational leaders, and he further suggests that in order to be successful in an evolving environment, executives obliged to accept and make full use of TL.

According to Politis (2001), Transformational leadership outperforms transactional leadership in terms of knowledge acquisition features (management, structure, personal characteristics, problem-solving skills, and communication). Furthermore, Lowe et al. (1996) found that leaders who employ the TL style are more successful and have greater work efficiency than those who only use transactional leadership in their meta-analysis.

A study by Boerner et al. (2007) indicated that TL had a stronger impact on followers' performance and inventiveness in problem-solving than transactional leadership.

In a successful implementation of TL, innovation is considered one of the most essential elements for organisations to focus on due to its role in gaining success and achieving competitive advantages (Tidd & Bessant, 2018; Sarros et al., 2008; Schilling, 2010). Applying innovation within organisations affects the employee's performance and the organisation's overall performance. It also helps in improving problem solving by introducing new ideas and thoughts (Varis & Littunen, 2010; Walker, 2007). However, due to rapid advancements in technology, organisations have been advised to incorporate innovation into their operations because it is critical to their success (Trott, 2008; Matens, 2013). Sarros et al. (2008) notes that for organisations to be able to deal with change, adequate leadership must be adopted.

2.3 Innovation and its importance

The importance of innovation for all organisations and even governments was articulated by Schumpeter almost a decade ago when he outlined the importance of innovation for all organisations and countries (Schumpeter et al., 2017). The relationship between innovation and organisational success was later highlighted by Pitt (2007). De Jong and Hartog (2007) and Pitt (2007) explain that innovation is important for organisations to achieve long-term competitive advantages. Moreover, Kamasak and Bulutar (2010) note that nowadays, innovation is considered a power for organisations. Further, it was noted by Sarros et al. (2008) that innovation is crucial for an organisation to thrive in the market, since it can help introduce a new market and improve the organisational efficiency. It is a critical component of economic development, allowing businesses to expand more quickly and profitably (Tidd and Bessant, 2018).

2.3.1 What is innovation?

It is challenging to provide a straightforward definition of innovation. The notion of innovation has attracted the attention of several respected scholars and academics. Yet, innovation has been characterised in a different way and from various perspectives as being either a result or a process. The notion of innovation originally appeared in the literature when Schumpeter (1983) defined it as the production of new products and services and processes, as well as their influence on economic progress. Innovation is a tough concept to define since it is so complicated. Part of this complexity stems from the fact that innovation differs based on the organization's form. It also has diverse meanings based on the organization's field (Choi & Lee, 2002).

Nystrom (1990) defines innovation as new products, services, and processes that aim to improve an organization's competitive edge while also meeting evolving customer demands. Moreover, it was noted by White and Glickman (2007) that innovation introduces innovative thoughts, methods, and devices. A broader definition has been given by different scholars, who describe innovation as the invention and acceptance of fresh ideas, behaviours, products, systems, processes, policies, and management programmes (Liao et al., 2008; Herkema, 2003; Daft, 1978). Innovation, according to Vaccaro et al. (2012), is an organisation's perception of a unique product, method, or distribution channel.

Other studies have broadened the notion of innovation. For example, Albury (2005) defines it as the development and implementation of new products/services, procedures, and delivery methods, which increase the organisation's performance. Further, Amabile (1998) defines innovation as the successful execution of innovative ideas inside an organisation. Innovation is the process of developing, adopting, and implementing new

ideas or actions in order to improve products, services, or work methods (Chen & Tsou, 2007). Nusair et al. (2012) explains that innovation is the generation, adoption, or development of new ideas and methods, as the subsequent implementation of them in order to achieve the organisation's goals and objectives. Additionally, creating new knowledge and the way of presenting it is what innovation often is said to refer to (Tidd and Bessant, 2018).

Sadeghi and Rad (2018) suggest viewing innovation as the commercialization of a new product or technique due to the broad definition of the term. They go on to say that this concept encapsulates innovation in any sector. However, while this definition is clear and straightforward, innovation encompasses a much broader range of activities. Innovation includes more than just new products; it also includes new ideas, organisational structures, and methods of presenting products to markets. To put it another way, innovation is a broad notion that may be used throughout organisations in the form of new concepts, new client services, new goods, and so on (Sadeghi & Rad, 2018).

Innovation, according to the previous definitions, is a multi-step process that includes various patterns, steps, or segments, as well as the production or adoption of a new concept. However, the adoption process is not the same as the production process, as it involves training and decision implementation (Damanpour & Aravind, 2012).

In the literature relating to innovation, scholars such as Trott (2008) found that there are overlaps between the notion of innovation and transformation. Individuals or groups generate new and suitable ideas, which is an activity referred to as creativity or invention. It is simply a thought or group of ideas. Hence, it is the conceptual component of innovation. Moreover, it is considered the first step for innovation, and while it is important, it does not solely account for it (Tidd and Bessant, 2018). Creativity can arise at the

organisational level and the individual level. At the organisational level, it involves the individual's creativity inside the organisation and the way he or she acts in different social interactions. In contrast, through intellectual abilities, creativity arises at the individual level. This all depends on the individual's abilities in solving problems in different ways, their personal knowledge, and their ways of thinking, which allow them to overcome obstacles and risks (Ahmed & Shepherd, 2010; Schilling, 2010).

2.3.2 Type of innovation

To understand the organisation, it is critical to recognise that there are numerous types of innovation (Damanpour et al., 2009). In the literature, several types of innovation are mentioned. However, scholars and researchers have described the different forms of innovation in various ways and under various titles, as follows:

2.3.2.1 Front-end innovation/ back-end innovation

According to Deschamps (2005), the different stages of process innovation require different styles of leadership. Thus, there are two types of innovation: front-end innovation and back-end innovation.

Front-end innovation works via consideration of the market's needs and by analysing new technology that is implemented in the market. Moreover, ideas begin to be generated to assist organisations in achieving their goals. Furthermore, in order to achieve this type of innovation, leaders must have exceptional characteristics such as being aware of all new technologies; thinking outside the box; having great skills to control complicated conditions; and understanding that great results need patience, along with the ability to accept risks and the ability to understand the reasons for failure and work on improving them (Deschamps, 2005).

On the other hand, back-end innovation works by gaining benefits and having a great position in the market. The main object in this type is to strengthen the organisation's position through developing and testing resources to create and establish new products before competitors (Deschamps, 2005). In order to do so, leaders who are practising this type of innovation must have exceptional characteristics. Such leaders should have the ability to solve problems; put together an achievable plan that fits the market using the required knowledge and management skills in order to apply it. Moreover, such leaders must have the confidence to take quick and sound decisions; and finally, must have the skills to lead to achieve organisational success (Deschamps, 2005).

2.3.2.2 Top-down (administrative) innovation/ bottom-up (technological) innovation

Different scholars differentiate between administrative innovation and technological innovation (Deschamps, 2005; Jaskyte, 2011; Birkinshaw et al., 2008). Administrative innovation is concerned with the use of novel ideas in the management of innovation and involves a shift in administrative procedures or organisational structures. Although this form of innovation does not entail modifications to items and takes place due to a requirement for internal structure, it is nevertheless considered innovative (Henriques & Sadorsky, 2007, Choi et al., 2010). It contains rules, procedures, a management system, and team training programmes (Jaskyte, 2011), and affects processes and product innovation indirectly (Damanpour, 1992).

On the other hand, technological innovation encourages, creates and fosters a positive atmosphere for followers, as well as manages information, takes risks, and is able to fix and learn from mistakes (Yalcinkaya, 2018). By encouraging new ideas and the ability to select the best of them, as well as growing and improving followers, it is linked to the

crucial work actions of organisations (Deschamps, 2005; Jaskyte, 2011; Damanpour & Schneider, 2006; Griffith & Yalcinkaya, 2018). Furthermore, Damanpour et al. (2009) adds ancillary innovation to the concepts of administrative and technological innovation, thus serving the communal agenda, such as development programmes.

2.3.2.3 Radical and incremental innovation

Scholars like Schilling (2010) and Schuhmacher et al. (2018) differentiate between radical and incremental innovation. Radical innovation is defined as 'fundamental changes in technology', which includes 'major changes in product or process innovation' (Schilling, 2010; Schuhmacher et al., 2018). Organisations must use both internal and external data to undertake radical innovation (Ritala et al., 2013). Radical innovation is a time-consuming and expensive process. It does, however, create new client requirements, which has an influence on the company's market performance. It is also a crucial part of long-term success because it is non-linear and discontinuous (Moosmayer & Koehn, 2011; Tidd & Bessant, 2011).

On the other hand, incremental innovation can construct a basic linear process of continuous change, wherein it is concerned with enhancing product or process innovation rather than master alterations. These changes are usually component amendments (Ritala et al., 2013; Ahmed & Shepherd, 2010; Smith, 2015). This form of innovation may occur in a typical setting, and it is a continual process due to constant changes in technology (Egbu, 2004). In most organisations, incremental innovation accounts for 90% of product innovation. It is typically classified as a market-appealing innovation that offers opportunities to expand on present knowledge (Sorescu & Spanjol, 2008).

Two further types of innovation were argued for by He and Wong (2004): exploitation and exploration, where exploitation is a short-term process that involves refining,

implementation, efficiency, and production and in contrast exploration covers a longer length of time and involves behaviours such as study, discovery, experimentation, adaptability, and risk-taking (He & Wong, 2004). Additionally, Koch and Hauknes (2005) named five types of innovation: product, process, system, delivery, and strategy. However, product innovation, according to Koch and Huaknes (2005), focuses on the characteristics and design of products and services. New ways of offering a service and connecting with clients are examples of delivery innovation. The creation of policies, processes, and organisational forms is referred to as “process innovation”. System innovation refers to advancements in how people communicate with one another. Transformations in the organisation's aims, plans, and rationale are examples of strategy innovation (Schmuck & Benke, 2020).

Hamel (2006) stated that process innovation and management innovation are examples of innovation. Managing logistics and interacting with clients are parts of the process innovation. On the other hand, building strategies and managing projects and staff evaluation are parts of the management innovation. Additionally, Pitt (2007) identified seven different categories of innovation: product and process innovation, commercial innovation, service innovation, management innovation production and organisational innovation. Trott (2008) identified innovation as the implementation of new marketing strategies i.e., product packaging and distribution routes to the market. Trott also, divided innovation into five categories (product and process, organisation/management innovation and finally commercial innovation).

When evaluating the success of an innovation, there are several crucial aspects to consider. An innovation is a chance to introduce a novel idea, item, or system into action

while also considering the operative implications of novel technologies on marketing and market dynamics (Burgelman et al., 1996). Hage and Meeus (2006) mentioned four types of innovation, and split these into a further two types related to product innovation and two related to process innovation. Moreover, there are three types of innovation according to Damanpour et al. (2009), which are: service innovation, administrative process innovation, and technological process innovation.

However, as the preceding discussion has shown, there are many different types of innovation, which differ based on the researcher's perspective and the area of investigation. The next sections will explain why this research focuses on product and process innovation.

2.3.3 Why product and Process innovation

Pitt (2007) notes that innovation is a vital path towards attaining a company's aims and objectives, while Trott (2008) argues that product and process innovation are the core of all innovation types. Product and process innovation are very important for organisations. It was argued in the previous literature that these types of innovation improve an organisation's ability to solve problems and also enhances its overall performance (Becker & Egger, 2013; Ahmed & Shepherd, 2010). In addition, other scholars such as Liao et al. (2008) and Tsai et al. (2001) argue that the two components can affect an organisation's failure or success, and that it can also improve the organisation's flexibility to create environmental change and improve problem solving.

However, Ke-Xin et al. (2006) and Pitt (2007) argue that through applying process and product innovation, organisations will be able to understand the various ways of gaining a competitive advantage. Also, organisations can reduce their production costs through applying these two types of innovation (Mansury & Love, 2008). Technical innovation,

which includes both product and process innovation, has the potential to improve manufacturing and distribution processes, according to Chen et al. (2012). Organisations with more product and process innovation skills may better respond to the environment and create the functionalities required to improve organisational effectiveness more quickly (Liao et al., 2008; Jimenez & Vall, 2011). Product innovation is considered a vital element for organisational growth as it can find new ways to develop effectiveness and it is flexible to environmental changes (Schilling, 2010; Liao et al., 2008; Matzler et al., 2008).

Product and process innovation are critical aspects for organisations to accomplish their objectives (Bohlmann et al., 2013; Un et al., 2010). Product and process innovation can enhance an organisation's proactivity in discovering opportunities and utilising their current strengths. Thus, understanding innovation can be achieved through product and process innovation (Menguc & Auh, 2006; Skerlavaj et al., 2010).

The impact of product and process innovation on organisational performance has been discussed and measured in many empirical studies. For example, it has been noted that there is an encouraging impact on the industrial workforce in Spain when they utilise process innovation (Vicente-Lorente & Zuniga-Vicente, 2012). A study of the electronic firms in Thailand conducted by Ussahawanitchakit (2012) showed that the overall performance and competitive advantages can be affected by applying product and process innovation. Moreover, studies shows that product and process innovation are linked to leadership and performance (Garcia-Morales et al., 2006). Also, Pianta (2005) notes that team leaders feel forced to make judgments on product innovation to improve the quality and diversity of their products, and it has further been pointed out that social performance can be enhanced through product innovation (Garrido & Camarero, 2010).

2.3.4 Product innovation

Researchers such as Schilling (2010) note that product innovation is linked with the success of an organisation and can help in creating a leading position in the marketplace. Thus, product innovation could be found in an organisation's results. Product innovation has been defined in the previous literature based on a variety of viewpoints. For example, product innovation is defined as the introduction of new or enhanced products (goods or services) for their intended application. This may be a considerable advancement in terms of technological requirements, materials, software, or other factors (Oecd Oslo, 2005). Hage and Meeus (2006) note that product innovation is divided into two categories: products and services innovation. Moreover, it was clarified by Damanpour et al. (2009) that, depending on customer demands and the market's needs, product innovation usually includes new products or new services. Additionally, product innovation is described as the process of developing a new product or service. It is a crucial aspect in gaining a competitive edge and targeting potential customers (Un et al., 2010). Juliano et al. (2010) describe product innovation as the creation of a new product that can assist a company to continue operating in the marketplace.

According to Bohlmann et al. (2013), product innovation involves providing new features to clients by either enhancing a current product or by inventing a new one. They went on to say that product innovation is a critical aspect for businesses to attain profitability since it is the primary source for a competing advantage. Moreover, it is fundamental when seeking to meet a customer's needs (Lichtenthaler & Ernst, 2012). This form of innovation is tied to the organisation's principal activity and can lead to opportunities for the company to expand into other sectors. Product innovation may also assist the organisation in dealing with tumultuous conditions and is regarded as a key driver of business performance in dynamic marketplaces (Trott, 2008; Ooi et al., 2012; Damanpour, 2009).

Scholars and researchers have investigated product innovation and measured it from a variety of perspectives. One researcher looked at the profit and diversity of the product in order to measure it (Tsai, 2001). Furthermore, the percentage of sales of new goods or services adopted in the previous three years can be used to evaluate product innovation (Ooi et al., 2012). Therefore, Murovec and Prodan (2008) paid attention to the quantity of products and to the innovation expedition. Moreover, the ration of innovation tendency, as well as the success of product innovation, were used to examine product innovation in Turkey. The first criterion measured the proportion of sales created by product innovation to overall sales, while the second measured the proportion of revenue earned by innovation to the cost of creating such innovations (Gumusluoglu and Ilsev, 2009). Using products introduced within the organisation was the focus of many researchers in order to study product innovation (Skerlavaj et al., 2010, Faems et al., 2005). Product innovation has been defined as products that are both new to the evolving company and in the market (Pullen et al., 2012).

2.3.5 Process innovation

Process innovation attempts to improve the efficacy of organisational processes in order to promote the production and distribution of goods and services to consumers (Schilling, 2010). Process innovation includes managerial activities and decision-making at both the individual and organisational levels (Ferreira et al., 2015). Wang and Ahmed (2004) note that process innovation is barely included in the literature, while being a fundamental tool that can assist organisations to achieve their goals and objectives. Moreover, process innovation can be highly important for many different reasons. Firstly, process innovation has a business value that is proportionate to the degree of production produced by a certain enterprise. As a result, as industries develop and expand the amount and frequency with which their business processes are used, they have greater incentives to

explore process innovation (Adner & Levinthal, 2001). Secondly, product and process innovation are inextricably linked. When organisations need to launch new items, they must adjust existing processes or even create new ones if they entail procedures that are new to the company (Adner & Levinthal, 2001). Thirdly, many product-based firms have begun to embrace a servitization strategy, in which considerable portions of income are earned by services delivered in conjunction with physical items (Kowalkowski et al., 2017). Thus, establishing and refining the procedures that support these services is critical for competitiveness and long-term success (Trkman et al., 2015).

According to the earlier literature, there are various kinds of process innovation. For example, Mikalef and Krogstie (2020), in their study, describe process innovation as a firm's capacity, in comparison to its rivals, to apply collective knowledge, skills, and resources to new process innovation activities in order to produce added commercial value for the organisation (Hogan et al., 2011). They defined two types of process innovation: radical and incremental. Radical process innovation considers the organisation's ability to change or to recreate the current process through the introduction of novel ones (Subramaniam & Youndt, 2005). On the other hand, incremental process innovation is the capacity of an organisation to strengthen and expand its current knowledge of processes by significantly improving or expanding them (Gallouj & Savona, 2009).

Technical and administrative process innovation were distinguished between the two types of process innovation. Introducing new aspects to the organisation's production system is what technical innovation refers to (Zhang et al., 2019). In contrast, administrative process innovation involves encouraging and rewarding organisational members, improving work structure, and changing processes (Birkinshaw et al., 2008). Process innovation has been explored in terms of the amount of process innovation and

the number of possible applications or innovations (Yang, 2010). Table 2.3 present the process innovation as addressed by the previous researchers:

Table 2.2 process innovation.

Perri (1993)	Implementing new methods to make the production of goods and services easier.
Afuah (2003)	Including new input specifications, tools, tasks, and data in an organization's operations.
Boer and During (2001)	Changing the method of producing items and the way of delivering what the organisations offers.
Wong and He (2003)	developing new operational procedures and deploying new technology to create new manufacturing processes.
Jaskyte (2004)	Viewed it as the development of new service and delivery models
Wang and Ahmed (2004)	Implementing new production, methods, and new technology and using it to increase the production and the new management process.
Tidd and Bessant, 2018.	Putting in place new production or delivery processes that involve changing methods, tools, and software
Ahmed and Shepherd (2010)	Modifications to how an organisation carries out its responsibilities and goals.
Ooi et al. (2012)	Organisational factors that cover the enhancement of internal operations and capacity.

2.4 Knowledge sharing

2.4.1 What is knowledge?

Many academics and philosophers have investigated the notion of knowledge, and a variety of arguments and viewpoints have arisen. For instance, Nonaka (1994) notes that the knowledge concept has several aspects, while Cook and Brown (1999) highlight the viewpoints of knowledge theory in this regard, noting that knowledge may be seen from two perspectives: possession and practice. Other researchers, such as Alavi and Leidner (2001), concur with this assumption, viewing knowledge as information that people or individuals have in their brains, regardless of whether the information is unique (or not), beneficial or incorrectly related to realities, processes, or decisions. However, according to Nonaka et al. (2016), knowledge is defined as justifying the real belief of the holder. Furthermore, Hislop and Helms (2018) state that knowledge is an item or unit that individuals own, with cognitive qualities, ability, and resources that may be utilised to improve the performance of an organisation. Finally, according to Lin (2019), knowledge is a concept with rich connotations and extensive reach.

According to the entity perspective, knowledge is an object that can be stored. The epistemology of practise defines knowledge as what individuals actively do, taking a subjective approach to knowledge, which may be produced and communicated through interaction with the public (Hislop & Helms, 2018). There are numerous aspects to consider when it comes to knowledge, according to Hislop and Helms (2018), such as an individual's mood, an entity, a method, the possibility of being able to access information, or a competence. Additionally, Alavi and Leinder (2001) explain that individual mood presupposition is the fact of knowing something, which sheds light on providing the individual with an opportunity to learn more and apply it to the firm's needs. Also, the

assumption behind such processes focuses on putting knowledge into action. The possibility of being able to access information means that organisational knowledge will be organised to allow for content access and retrieval. The capability perspective refers to the capacity to explain and apply knowledge, as well as the ability to put learning and experience into action.

Armstrong (2009) characterised knowledge as comprehending ideas, philosophies, individuals, and objects, and how to accomplish things. Four separate characteristics may be summarised as knowledge:

- Knowledge is an object that can be separated from those who possess it.
- Based on a positivistic philosophy: knowledge can be objective.
- Explicit knowledge (objective) privileged over tacit knowledge (subjective).
- Knowledge is a cognitive entity.

According to the objectivist approach, the nature of knowledge represents the basic qualities of knowledge. Knowledge is viewed as a (cognitive) structure/commodity that individuals possess. Nevertheless, knowledge may be found in structured form without the help of humans. Knowledge, according to Hartmann and Doree (2015), might be an “objectifiable, transferrable commodity.” As a result, knowledge could be given a code, could be clarified, and could be isolated from the person who created, improved, and used it. Similar information may be found in a variety of formats, including documents, graphs, and computer systems, as well as embedded in physical objects like machinery and equipment.

Finding a text-based handbook on computer operating procedures in document form, on a CD, or through a web browser, are all examples of explicit knowledge. This notion was

King and Marks (2008), who discuss the relationship between information technology and people's own knowledge. In addition, objective knowledge can be created. This assumption highlights the potential of generating a sort of knowledge and supports the understanding that it is independent of individual subjectivity. This illustrates the 'knowledge is truth' approach of McAdam and McCreedy (2000), in which they examine explicit knowledge and the canonical body of scientific facts and laws that are at the same stage of equality developed by culture and time.

Other academics have suggested that knowledge should be ordered into a hierarchal structure. According to Uriarte (2008), knowledge consists of data, facts, and pictures gathered from observation rather than analysis, and is information that encapsulates the data. According to Ellis (2003), in order to develop information, one must look at the data as organised facts. Davenport and Prusak (1998) recognise knowledge as a complex feature that is distinct from facts and information but is intertwined with both. Data are raw facts, measurements, and statistics; knowledge is not to be mistaken with data. However, knowledge is more complex than mere information, which is derived through the organisation of facts into meaningful forms. Knowledge is the outcome of interpreting information based on one's understanding. As such, Lee and Yang (2000) note that knowledge is impacted by the holder's personality since it is dependent on judgement and intuition; knowledge therefore includes beliefs, attitudes, and behaviours.

Ackoff (1989) broadened the notion of knowledge by placing wisdom above all else, implying that knowledge may be organised into four categories: data, information, knowledge, and wisdom. Moreover, he claims that the first three sorts are concerned with the past, whereas wisdom is concerned with the future (see Figure 2.2). Sardar (2020) argues that wisdom is concerned with how we apply what we know, and that it is primarily about judgement and the ability to tell the difference between good and bad. Moreover,

there is a difference between truth and illusion in terms of what is good and what is destructive (Sardar, 2020).

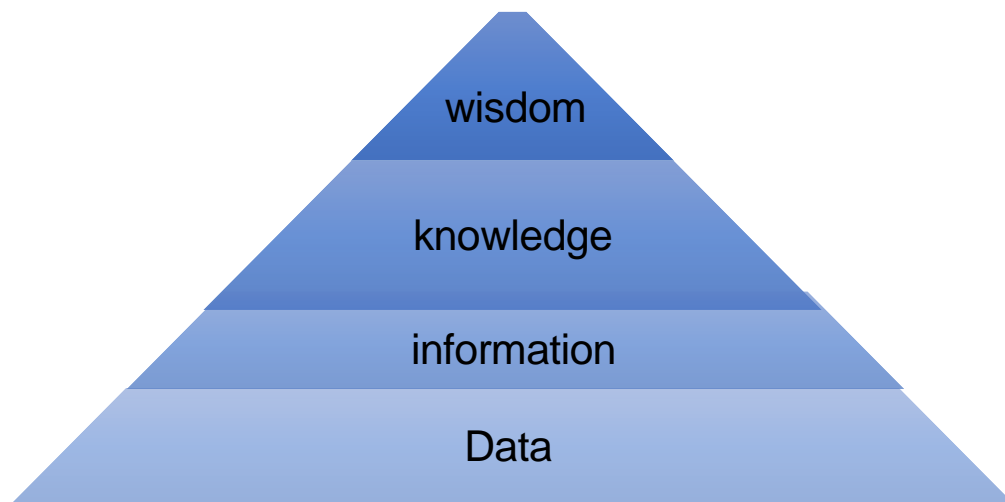


Figure 2.2 Notion of Knowledge (Sardar, 2020, p.3)

However, before information can be communicated, knowledge must exist, and information must exist before data. As a result, data, information, and knowledge cannot be separated in this perspective (Sardar, 2020). Sardar (2020) also states that for information to become knowledge, it must be grasped and interpreted. Additionally, Hislop (2009) notes that information is refined concise facts, whereas knowledge is the interpreted denotation of information.

Following these views and arguments, there are four dimensions, which are related to each other in terms of hierarchy, where data and information are the basis and support to knowledge and wisdom. Moreover, scholars such as Bartol and Srivastava (2002) view knowledge as a comprehensive notion that encompasses experiences, beliefs, expertise, information, and ideas that support individuals and organisations in their development. Further, Davenport and Prusak (1999) define knowledge as a fluid mixture of framed

experience, values, contextual knowledge, and expert insight that serves as a framework for assessing and assimilating new information and experiences.

Regardless of the minutiae of the various definitions of knowledge provided above, academics and scholars agree that knowledge is a collection of information and experience that are linked to one another and help people make better decisions.

2.4.2 Types of Knowledge

Knowledge types have been described by many researchers in the literature. For example, formal and informal knowledge was differentiated by Conklyn (1997), who explained that on the one hand, knowledge obtained from books and manuals is formal knowledge, while on the other, gaining knowledge from interaction with others is informal knowledge. Also, Christensen (2007) outlined four forms of knowledge: expert, coordinated, entity, and knowledgeable information. A further two types of knowledge were differentiated by Fernandez et al. (2004): declarative knowledge and procedural knowledge. Declarative knowledge is a term used to describe views about the connections between variables, whereas procedural knowledge refers to skills and abilities required to do a task.

Many researchers, such as Nonaka (1994), have separated knowledge into personal and social categories. Individual knowledge, also known as collective knowledge, is developed by individual people, whereas social knowledge is formed by and inherent in a group's collective behaviours. Mathew (2008) divides knowledge into three categories: factual, situational, and social. Mathew argues that factual knowledge is focused on understanding the facts, whereas situational knowledge is based on learning about a specific scenario. He further argues that social knowledge deals with social concerns, such as social networks and connections. Additionally, Lopez-Saez et al. (2010) discuss

how knowledge can be shaped into two types: external and internal. They argue that clients, vendors, and other businesses can provide external information, while internal knowledge is obtained from sources within the organisation, such as staff members, the research and development department, or the production division.

However, the most widely utilised categories of knowledge in the literature are tacit and explicit knowledge, which are the subjects of this research. Polanyi (1967) was the first to employ this form of knowledge, but Nonaka (1994) has subsequently applied it to organisations. Personal, subjective, and intangible knowledge are all described by tacit knowledge (Hislop, 2009). Tacit knowledge is defined as kind of `know-how` that exists purely in people's minds and is not documented in any tangible form (Gamble, 2020). Moreover, tacit knowledge is separated into two categories: technical and cognitive, according to Nonaka et al. (2006). The technical component comprises informal personal talents such as know-how and crafts that are appropriate to a given scenario, while the cognitive component includes beliefs, paradigms, values, and a person's psychological model.

The main difficulty with tacit knowledge in the workplace is that it is difficult to convey and communicate tacit knowledge throughout an organisation since it is intangible and frequently subconscious (Chen et al., 2018). Kim and Ju (2008) discovered that HEI staff members acquire this sort of expertise either through teaching courses or through practical experience. According to Kim and Ju (2008), faculty requests for the sharing of high-quality resources and expertise are increasing in academic institutions. In a post-capitalist knowledge-oriented society, knowledge workers such as academics at higher education institutions are the primary force for change. Thus, it encompasses their problem-solving abilities as well as their research abilities. According to Gamble (2020), tacit knowledge can contribute considerably to a long-term competitive advantage in

businesses, because there are inherent barriers to replicating competitors within an organisation's function. Furthermore, tacit knowledge is considered essential for getting things done and is key to organisational activities that lead to innovation, like gaining new knowledge, developing new products, and refining procedures (Gamble, 2020).

Explicit knowledge is that which is codified and can be easily shared and transferred (Nonaka 1994). Manuals, plans, processes, policies, projections, inventory levels, manufacturing schedules, market intelligence data, and so on are examples of explicit knowledge (Schoenherr et al., 2014). As a result, it is more common in the workplace (Nonaka, 2005). Object-based and rule-based knowledge, according to Nonaka et al. (2006), are examples of explicit knowledge. Intangible knowledge such as words, figures, and formulae, as well as tangible knowledge such as equipment and papers, are referred to as object-based knowledge, whereas rule-based knowledge refers to knowledge transformed into organisational rules, routines, and processes. As a result, it is known as 'know-what'.

One of the most popular conceptualizations of the link between tacit and explicit knowledge is that they exist on a continuum, i.e., they are two extremes of the same broad knowledge spectrum, rather than two discrete knowledge typologies (Nonaka & Von Krogh, 2009). While Hislop et al. (2018) posit that there are clear demarcations between pure tacit and explicit knowledge, Panahi et al. (2016) argue that there is a middle ground where both are relevant. People have shifted from tacit knowledge to 'simple' explicit knowledge in evolving organisational settings, according to Nonaka and Von Krogh (2009). As indicated by the literature, the line of demarcation between diverse knowledge typologies on this continuum is certainly subjective. Chuang et al. (2016) agree, suggesting that changes in an individual worker's ability to express and formulate information 'tacitness' decide where tacit and explicit knowledge are placed on this

continuum. As a result, the internal line of demarcation is constantly moving. Although most management literature simply recognises that the two knowledge typologies are complementary (Maravilhas & Martins, 2019).

However, according to Nonaka et al. (2006), there are four ways that explicit and tacit knowledge might interact to transform individual knowledge into organisational knowledge: socialisation, externalisation, combination, and internalisation. (See Figure 2.3).

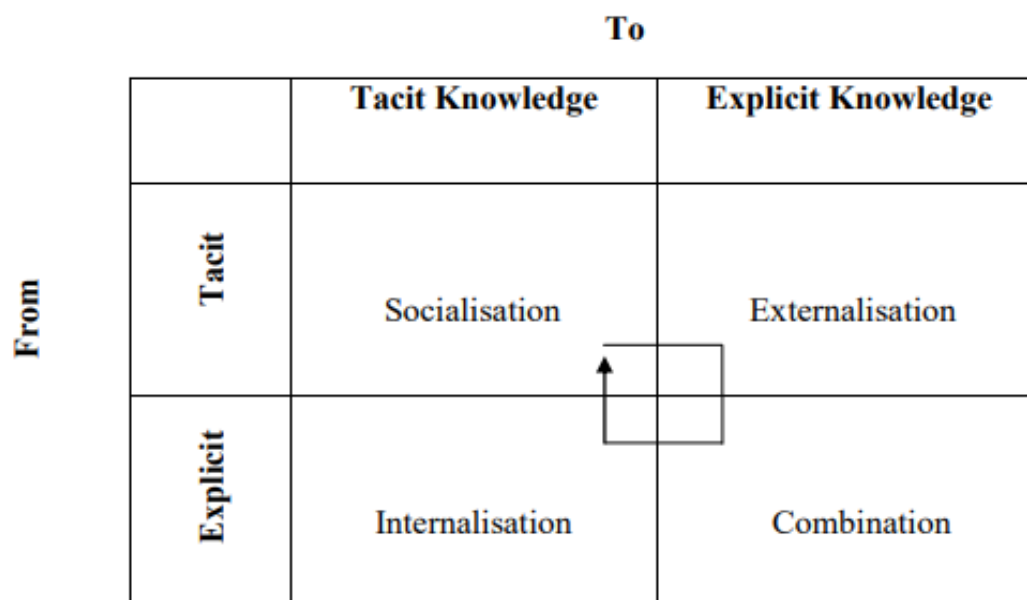


Figure 2.3 SECI model (Nonaka, 1994, P.19).

Socialisation entails the transfer of tacit-to-tacit information. Through direct and indirect contact or interaction, seminars, presentations, brainstorming, casual meetings, and training are used to share the experiences of the organisation's members. Although personal knowledge is disclosed freely, nevertheless, it is still considered tacit knowledge. Externalisation is the process of converting implicit knowledge into explicit knowledge using metaphors, analogies, hypotheses, and concepts, as well as textual and technical channels. This is a vital step in the knowledge conversion process since knowledge is

utilised through it. Knowledge can be utilised via a process of shifting knowledge from explicit to explicit through using social procedures such as documents, meetings, and many different ways of interaction. Moreover, during this stage, knowledge is being processed and classified. Von Krogh et al. (2012) note that at this stage, knowledge is plain and obvious and it is a simple document to share. The growth of new concepts and learning from written sources are used to internalise explicit-to-implicit knowledge. According to Nonaka and Toyama (2005), this technique can lead to comprehension and the formation of a learning culture. Furthermore, they suggest that people's usage of tacit knowledge broadens the learning cycle of knowledge development.

2.4.3 Knowledge management

Knowledge management (KM) is an interdisciplinary business strategy that encompasses all aspects of knowledge generation, coding, sharing, and application in order to improve innovation and learning in the workplace (Meihami & Meihami, 2014). Donate and Guadamillas (2010) note that the management process, which occurs at the individual, group, and organisational level, improves the enhancement of knowledge production, acquisition, and exploitation in organisations.

According to Omerzel et al. (2011), it is a planned activity in an organisation that comprises important knowledge identification, new necessary knowledge development, and knowledge transfer among personnel. All of these activities must be integrated into the entire operation of the organisation, starting with the knowledge culture of essential components and by relying heavily on information technology.

Knowledge management systems (KMs) are used in gaining and maintaining talent in any organisation to assist in the KM process. Meihami and Meihami (2014) identify these as uses of the organisation's computerised communications and information systems.

Additionally, Meihami (2014) argues that technology is not separate from communication and information systems in general, but includes databases, such as repositories of 'lessons learned', as well as networks and directories, such as those designed to connect organisation participants with known experts in various topic areas. Furthermore, Meihami (2014) emphasises that many knowledge management systems differ from organisational communications and information systems in that knowledge management systems are less automated and require human interaction to operate. While most information systems require human input during the design phase and thereafter run autonomously, some do not. Human participation in the operating phase is occasionally required by KMS.

Bollinger and Smith (2001) looked at the evolution of the KM concept from two perspectives, the objective and the process, noting that KM centres on exchanging knowledge for the benefit of the company. Chang and Lee (2008) state that the goal of knowledge management is to improve an organization's performance and increase its innovation. Davenport notes that KM in the workplace can minimise expenditure as problems are solved with shared knowledge. Chang argues that the goal of KM is to improve performance and increase innovation rather than solve problems. Implementing the KM concept provides a number of benefits, including helping decision-making, decreasing workplace errors, encouraging employee innovation, and increasing customer happiness (Ahmed & Shepherd, 2010). Humayun and Gang (2013) noted the competitive value that KM can bring through increasing knowledge creation and employee creativity (Humayun & Gang, 2013).

Knowledge management is a set of actions aimed largely at utilising one's own knowledge, as well as determining what emerges through the learning process and innovation, to add value to the organisation's goals and strategy.

2.4.3.1 Knowledge management process

According to Jafari et al. (2013), knowledge processes, knowledge management cycles, knowledge activities, and knowledge practise in general are all related to the same notion but with different titles or numbers of stages or activities. The following are some of the researchers' perspectives on the knowledge management process.

Lee et al. (2005) argues that there are five components to knowledge management that might define the knowledge process: creation, accumulation, knowledge sharing, utilisation, and internalisation. Jashapara (2004) notes that knowledge management refers to any technique or process that involves obtaining, developing, sharing, capturing, and applying knowledge. In this regard, Uriarte (2008) mentions knowledge creation, generation, transfer, and application. Nguyen and Mohamed (2011) studied knowledge exchange, knowledge socialisation and internalisation, while, knowledge creation, documentation and storage, sharing and application were studied by Andreeva and Kianto (2011), and finally, Ferraresi et al. (2012) discuss knowledge capture, sharing, and use.

All of the above researchers agree that knowledge sharing is a crucial and key step in knowledge management. As a result, in order to fill the research gap, this study focuses on the knowledge sharing process.

2.4.4 Why knowledge sharing?

In a knowledge-based economy, knowledge is commonly considered to be an increasingly crucial source of competitive advantage (Azem & Jafari, 2016; Davenport & Prusak, 1998; Minbaeva, 2013). Knowledge sharing has been claimed by a number of academics to promote a range of employment outcomes, including employee creativity, team creativity, and company inventive capabilities (Dong et al., 2017; Kim & Yun, 2015;

Men et al., 2017; Podrug et al., 2017). However, to enable knowledge sharing, Lam (2005) has argued that businesses have been urged to engage in knowledge management methods.

Knowledge sharing and management are important aspects of improving individual, team, and organisational performance, according to strategic human resource management (SHRM) (Minbaeva, 2013). Scholars such as Tan et al. (2010) and Camelo-Ordaz et al. (2011) note that knowledge sharing is essential for enhancing creativity and strengthening the organisation's competitive advantages. However, it may be impractical to assume that all staff are willing to share their knowledge (Michailova & Husted, 2003). Xiao et al. (2019) argues that employees sometimes hide information for a variety of reasons, including protecting their own interests, such as avoiding work intensification.

Additionally, knowledge sharing is a voluntary and selfless act performed by employees who have the capacity, desire, and inclination to do so (Kim et al., 2015). Carmeli et al. (2011) note that knowledge sharing has been proven to be extremely beneficial to businesses. It is also important for strengthening the organisation's competitive advantage and fostering creativity. Zheng et al. (2017) note that when KS is taken into account, it is suggested that creativity and effectiveness are more likely to be accomplished in KM. Other scholars, such as Sohail and Daud (2009), point out that the generation of new knowledge and the organisations' innovation are linked to their KS results. Furthermore, by applying knowledge sharing, the organisations' skills and competence will improve and subsequently enhance the organisations' value (Renzel, 2008). However, Yang and Farn (2009) argue that knowledge sharing is considered one of the most critical concerns for KM performance, especially when it comes to tacit knowledge sharing among organisational members.

Various scholars (Xiong & Deng, 2008; Bartol & Srivastava, 2002) have pointed out that employees' knowledge sharing brings organisational benefits and improves employees' abilities to accomplish their duties. Furthermore, it enhances their self-knowledge. Thus, the value of knowledge utilisation will increase, and overall performance can be improved within organisations (Willem & Buelens, 2007; Behery, 2008; Tan et al., 2010; Chang et al., 2017;).

Moreover, Yang and Chen (2007) note that by practising knowledge sharing, such as managing time, organisations will allow different advantages to be obtained. Additionally, Hendriks (1999) argues that the best method of translating personal knowledge into organisational resources is through practising knowledge sharing. Nevertheless, scholars such as Azema and Jafari (2016) and Al-Omari et al. (2013) mention the important role that knowledge sharing plays in helping managers make their decisions and in improving their organisational culture.

2.4.5 What is knowledge sharing?

Researchers and scholars have identified that knowledge sharing is a vital part of an organisation and is one of the main roles of KM (Anwar et al., 2019; Witherspoon et al., 2013). Moreover, knowledge sharing is considered a “building block” for an organisation's success (Witherspoon et al., 2013). Witherspoon and colleagues note that KS has been ignored for several years by human resources (HR) specialists, however, in 2000, the authors eventually understood the necessity of KS and KM for the survival of organisations and for their continued competitiveness. As a result, KM has become a significant part of the HR industry and many researchers have started employing the concept of KS in various domains (Witherspoon et al., 2013).

Knowledge sharing has been defined as a constant, dynamic learning process that includes communication between staff, consumers, and suppliers. This method helps the company to come up with fresh ideas, produce a new product, or develop new cost-cutting strategies in general (Kim et al., 2000). KS is viewed as a method of exchanging knowledge among individuals, groups, and organisations (Chen et al., 2018). KS, according to Tan et al. (2010), is an action or a process of transmitting thoughts, beliefs, views, and skills among individuals, groups, organisations, or societies. Tan et al. (2010) further state that this KS procedure helps in gaining a competitive advantage and describe the likely advantages that could be gained if employees were willing and eager to share their knowledge. However, this also improves their performance (Tan et al., 2010). Moreover, transferring knowledge is influenced by a number of elements, the most important of which are interpersonal trust and culture (Simonin, 1999; Javidan et al., 2005).

In the literature on knowledge transfer, the phrase 'knowledge transfer' is usually used to characterise KS (Massa & Tsesta, 2009; Uriate, 2008). Thus, a distinction is made between the transfer and sharing of knowledge by different researchers, such as Boyed et al. (2007) and Berggren et al. (2011), who claim that the application of knowledge from one context to another is what they mean by "knowledge transfer". As a result, it is suggested that the knowledge holder is the key source of information, and this information moves in one direction from the knowledge holder to the knowledge receiver. On the other hand, the knowledge sharing idea is wider and incorporates communication, understanding, and producing new knowledge, meaning that it happens between a number of individuals and in two-ways (see Figure 2.4).

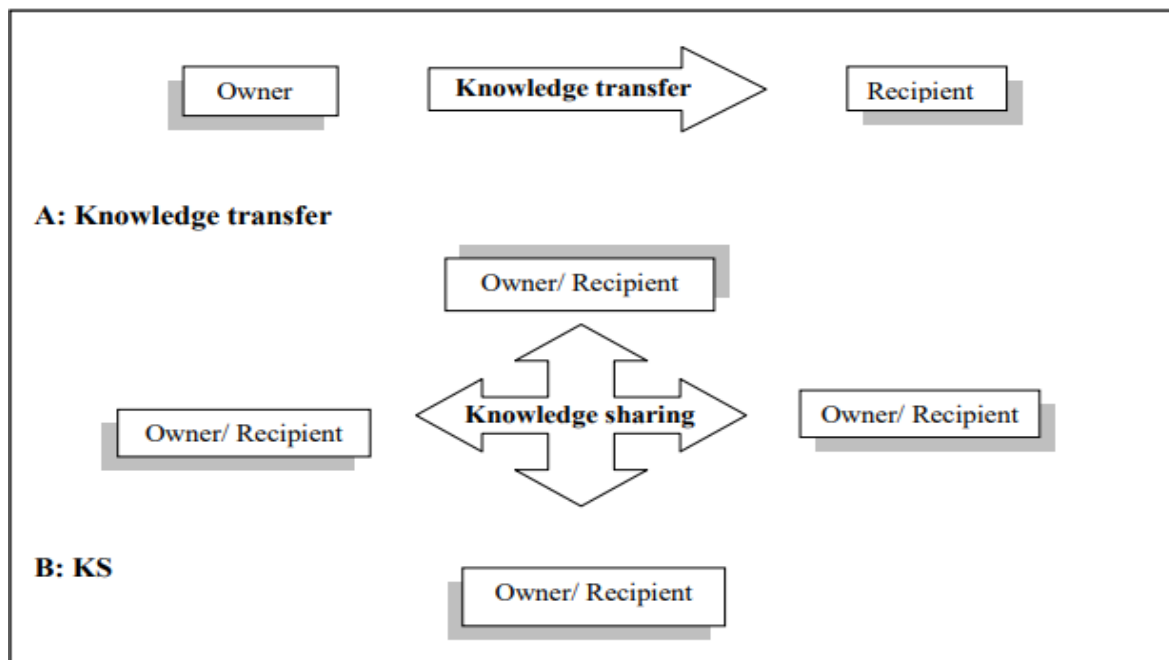


Figure 2.4 Knowledge transfer vs knowledge sharing (Boyd et al., 2007, P, 140).

Nevertheless, a multitude of definitions and theories have been proposed by academics and philosophers, resulting to the KS conceptions (see table 2.2). For example, Asrar-ul-Haq and Anwar (2016) indicated that the knowledge sharing concept is influenced by a variety of circumstances. However, different elements such as individual characteristics, group characteristics, and organisational expertise are taken into consideration when defining KS (Asrar-ul-Haq and Anwar, 2016). Additionally, Anwar et al. (2019) note that in order to properly define KS, it is important to clarify the factors that affect KS.

Sarkheyli et al. (2013) state that KS is described as a process of moving information, skills, and experiences from one person to another, whether on a personal or organisational level. They went on to say that knowledge management encompasses both forms of knowledge (tacit and explicit). To put it another way, KS is the act of transmitting, combining, interpreting, integrating, producing, and using information. Sarkheyli et al. (2013) provide three terminologies for knowledge sharing that are used to

depict the KS process: knowledge sharing, knowledge transfer, and knowledge flow. Moreover, it is possible to share knowledge at the individual, team, and business level, both within and beyond the organisation. (Sarkheyli et al., 2013).

Similarly, Chouikh and Dakhli (2012) point out the important role that KS plays as one of the most vital components of KM. Chouikh and Dakhli also note the challenging process of KS. However, in order to face these challenges and solve KS issues, they suggest that organisations must place more effort into applying KS, noting that the efficiency of KS procedures is determined by the organisation's features (Chouikh & Dakhli, 2012).

Table 2.3 KS Definitions

Scholar	KS definition
(Hooff & Ridder, 2004)	The exchange and creation of knowledge occur simultaneously through KS.
(Lin, 2007)	KS is a social interaction culture that encourages employees to share their knowledge, expertise, and talents.
(Sohail & Doud, 2009)	People's events, thoughts, and experiences are exchanged and shared through KS.
(Islam et al., 2010)	Individuals engage in a process of social exchange known as KS. From individuals to businesses, and from businesses to businesses.
(Masrek et al., 2011)	Individuals exchange their implicit and explicit knowledge as part of the KS process, which is a collaborative effort to produce new knowledge.
(Hitam & Mahamad, 2012)	KS is the sharing of knowledge, expertise, and skills among members of an organisation's various departments.
Kim et al., 2013)	Information, skills, and ideas are exchanged between people in an organisation using knowledge sharing (KS).

Various types of KS processes have been identified in previous research. Hendriks (1999), for example, differentiates between knowledge owners (who own the knowledge, also known as externalizers) and knowledge receivers. Additionally, Weiss (1999) argues that knowledge is split into knowledge collection, which comprises the gathering and

storing of knowledge, and knowledge connection, which involves accessing sources of knowledge and determining what knowledge is required. Other researchers, such as Ardichili et al. (2003) suggest that KS contains both a supply and a demand for new knowledge.

Furthermore, an empirical study of knowledge sharing, and firm innovation capability was conducted by Lin (2007), who splits knowledge into two types: the carrier of the knowledge, and the receiver. In a study conducted by Wei et al. (2009), KS processes were divided into two processes: knowledge seeking and knowledge contribution. In a similar spirit, Chen and Hung (2010) define KS as the contribution, collection, and utilisation of knowledge.

However, different scholars and researchers identify KS in different contexts and from different angles. As a result, this research follows Hooff and Weenen (2004), who investigated KS processes as knowledge donating and knowledge collection. Also, different researchers have tested these two processes in different environments (Jain et al., 2015; Phong et al., 2018; Mohajan, 2019; Akram et al., 2020).

Knowledge donating involves the process of exchanging information and often requires the individual's readiness to impart their expertise to other members (Hooff & Ridder, 2004; Kim et al., 2013; Phong et al., 2018). However, it has been argued that it is impossible to utilise knowledge donation without an individual's willingness to share what they have (Lin, 2007; Islam et al., 2010; Phong et al., 2018). Knowledge donation refers to the owner of the knowledge and his/her social interaction with others to help them improve their knowledge and solve problems more efficiently (Lin, 2007). Additionally, the main aim of knowledge donation is to transfer individual knowledge into group or organisational knowledge. Therefore, creating a great environment to encourage

members to transfer and exchange their knowledge with their colleagues will affect overall organisational performance (Darroch & McNaughton, 2002; Hooff & Weenen, 2004; Hislop, 2013; Ali et al., 2019; Akram et al., 2020).

In contrast, knowledge collection involves encouraging others to share their intellectual capital. The knowledge receiver must refer to the knowledge holder through observation, asking, or practicing. Moreover, it reveals the person's desire to ask for new thoughts or knowledge or the desire to accept new knowledge and know-how (Hooff & Weenen, 2004; Kim et al., 2013). This process also involves gaining knowledge and information from internal and external sources. Therefore, knowledge collection is considered to be the primary method for organisations to gain competitive advantages due to its role in affecting employees' learning, while engaging and utilising it (Lin, 2007; Phong et al., 2018; Mohajan, 2019). Knowledge donation, on the other hand, promotes employee confidence and reciprocal regard as well as the mobility of individuals' knowledge assets, which can be utilised for working progress (Phong et al., 2018).

2.5 Interpersonal Trust

2.5.1 What is Interpersonal Trust?

The idea of 'trust' as a significant phenomenon has been increasingly acknowledged in the social sciences literature. Essentially, it is the nature and value of developing and maintaining trust in commercial and interpersonal relationships (Hassan et al., 2012). Mahdikhani and Yazdani (2020) discovered transformational leadership and service quality in e-commerce businesses in the late 1950s and early 1960s, during which time the first empirical research on trust was conducted to investigate trust as an individual characteristic and to investigate trust in an individual's personal relationships. However,

Holste (2003) argues that trust became a popular and interesting topic in the late 1980s to early 1990s.

According to Mayer et al. (1995), trust is one side's readiness to react to the other's actions. Trust has been acknowledged as a significant phenomenon in a variety of social sciences, which focus on challenges connected to trust inside organisations (Blois, 1998). However, in light of today's highly complicated organisational environments, Atkinson and Butcher (2003) have proposed that co-operative relationships in the context of politically driven structures, flexible networks, strategic alliances, and entrepreneurial adaptability should be used instead of economic efficiency and hierarchy as contemporary management principles. Also, while Atkinson and Butcher (2003) recognise the importance of cooperation for organisations, it has taken on new significance in the current situation, where there is a focus on relationships rather than authority, and as a result, trust as a phenomenon has become an important component of organisational social capital.

Trust may be seen as a dynamic effect or a collection of feelings and judgments that grow and change over time (Young, 2006). In some cases, however, the truster places his or her faith in a trustee in one or more aspects of behaviour (Nooteboom, 2003). Trustees, according to Nooteboom (2003), can be individuals as well as groups, such as organisations and institutions. Furthermore, Robbins and Coulter (2005) define trust as a belief in a leader's integrity, character, and abilities. According to Mishra (1996), trust is defined as one party's desire to be vulnerable to another based on the idea that the latter is competent, open, concerned, and trustworthy. Annison and Wilford (1998, p. 34 as cited in Connel & Ferres, 2003) note that "Trust does not come with a pay-check, it has to be earned" and further suggest that it is an ongoing process. The challenge is how to build relationships based on trust within a complicated and changing environment.

Gordon and Scott (2006) discuss trust from economic, psychological, and social perspectives: Economists regard trust as a calculated or reasonable trade-off between the dangers and advantages of doing so. In other words, a course of action is taken that will provide the most profit to an individual. Psychologists define trust in terms of truster and trustee characteristics, focusing on a variety of internal cognitions that personal characteristics produce. Sociologists, on the other hand, consider trust to be a socially entrenched property of human interactions.

However, Dietz and Den Hartog (2006) argues that the idea of trust may be described as a belief, a choice, or an action. He also states that for the notion of trust to work, it must go through the steps of belief, choice, and action. In addition, Gillespie and Mann (2004) acknowledge that the basic need for interpersonal trust is for enduring both the team and the organisation's efficiency. Employees' trust in their top management and leadership has been linked to a variety of method and results that are connected to efficiency, including collaboration and problem-solving effectiveness, free will, and work engagement (Gillespie & Mann, 2004). Saleem et al. (2020) argue that followers can be influenced by their direct supervisors' attitudes and decisions due to their close relationship. Moreover, direct supervisors provide the basis for trust.

Interpersonal trust is one of the characteristics that contributes to organisational social order (Hassan et al., 2012). Interpersonal trust is described by Cook and Wall (1980) as the willingness to ascribe good intentions to others and have faith in their words and behaviour. Interpersonal trust is defined by McAllister (1995) and Zhang et al. (2021) as the extent to which the individual trusts and is prepared to behave on the basis of the claims of another, behaviours, and judgments. Hierarchical trust, which focuses on the supervisor-subordinate connection, is one type of interpersonal trust in companies. Much of the previous research on hierarchical trust has focused on subordinate employees' trust

in their immediate boss. According to Perry (2004), credibility, decision involvement, empowerment, and feedback were major determinants of supervisor trust.

Interpersonal trust is a psychological condition in which one party is prepared to accept vulnerability to the acts of another in exchange for the other doing a specific and meaningful action for them (Six, 2007; Lei et al., 2019). Individual trust, according to Alsharo et al. (2017), is critical for establishing and maintaining social interactions, as well as important in creating cooperative partnerships and successful teamwork. Risk, vulnerability, and uncertainty are significant parts of interpersonal trust that individuals must reduce in order to operate jointly and efficiently (Mayer et al., 1995). Furthermore, researchers such as Bligh (2017) and Le and Lei (2018) defined interpersonal trust as dynamic relationships and emotional bonds between employees in a company that are strongly associated with a variety of positive business outcomes, such as employee happiness, organisational performance, and KS behaviours.

Interpersonal trust is also highlighted as a factor of inventive behaviour among employees and a driver of innovation capabilities. Furthermore, interpersonal trust has been investigated as a crucial component in understanding many organisational dynamics and interactions. Interpersonal trust comprises cognitive, emotional, and behavioural elements from a psychological standpoint (Lewicki et al., 2006; Yang et al., 2009; Golipour et al., 2011; Lyu & Ferrin, 2018). Effective components of trust are tied to a particular relationship and emotional bond between people, such as empathy, affiliation, and rapport, while cognitive aspects are related to the partners' reliability, integrity, honesty, and difficulties surrounding fairness. Behavioural elements place a premium on rational decision-making based on the anticipation of and subsequent occurrence of trust (Lewicki et al., 2006).

Similarly, McAllister (1995) differentiated between two styles of trust: cognitive-based trust and effect-based trust. Furthermore, McAllister notes that the trustor's perceptions about the trustee's dependability and trustworthiness are the foundation of cognition-based trust. On the other hand, effect-based trust is defined as reciprocal interpersonal care and taking care gradually. Other types of trust essentially refer to the mutual trust between two individuals. Similarly, Erdem and Ozen (2003) argue that individuals seeking a reasonable foundation for trusting others is known as cognitive trust. Here, trust refers to how individuals trust one another, under what circumstances and with what documentation. The emotional dimension refers to interpersonal emotional interactions in which a person or item has an emotional relationship with them as a result of their understanding of emotions and motives (McAllister, 1995). A strong emotional component exists in McAllister's definition of effective trust, which emphasises a belief in the other's care for one's personal well-being. As a result, effect-based trust incorporates the social exchange components of mutual commitment, perceived support, and traditional trust. It's extremely similar to other researchers' conceptions of identification-based trust (Lewicki and Bunker, 1995).

Wang et al. (2010) state that there are two types of trust: one built on cognition and the other based on feelings and emotions. In interpersonal interactions, the structure of trust can differ depending on whether a rational or emotional basis is present. This distinction affects the quality and results of interpersonal interactions (McAllister, 1995).

However, some researchers have argued that there is a link between cognitive and emotional structures (Holmes & Rempel, 1989; McAllister, 1995). Based on intimate connections between people, emotional trust is developed via intimate connections between people based on cognitive trust. Cognitive trust is considered more significant at the beginning of a relationship, while emotional trust becomes more vital as the

relationship progresses (Holmes & Rempel, 1989; McAllister, 1995). Additionally, Schaubroeck et al. (2011) state that cognition-based trust and knowledge-based trust are alike, and are further very similar to the competency and reliability aspects of trustworthiness, as defined by Mayer et al. (1995). Both terms pertain to a person's level of trust in another and are partly based on evidence. Due to the fact that people are often hesitant to enter into intimate social exchange relationships with co-workers they do not deem competent, McAllister (1995) proposed that cognition-based trust is a causal antecedent of effect-based trust (Ma et al., 2019).

Researchers generally believe that productive working partnerships begin with a high level of confidence in the other's abilities, notwithstanding the parties' lack of acquaintance. The truster's intrinsic proclivity to trust people, the pre-existing reputation of the trusted target (trustee), cognitive categorization processes (as with homophily, stereotyping, and in group identification), and structural guarantees all play a role in this trust. Trusters are found to refresh their knowledge of the other party's competency and reliability when episodes give an opportunity to monitor the trustee (Williams, 2001; Lewicki et al., 2006; Ma et al., 2019).

However, individual and team development and improvement will be facilitated by trust between team members, which will have a direct and indirect impact on both individual and team performance. In today's competitive business world, building trusting interpersonal relationships is essential (Mahdikhani & Yazdani, 2020). There have been links discovered between high levels of trust and numerous aspects of individual and organisational performance. Cook and Wall (1980) discovered that interpersonal trust, overall work satisfaction, and intrinsic motivation have favourable connections. They also discovered a link between interpersonal trust and self-reported anxiety. Staples (2001) states that employee confidence in management is linked to better levels of job

satisfaction and lower levels of job stress. Moreover, Connell et al. (2003) discovered favourable associations between trust and personal well-being, work satisfaction, and commitment, as well as the role of trust in predicting organisational performance. Goodwin et al. (2011) further state that most of the transformational leaders' followers apply both types of trust in their managers, and the reason for that is the role-modelling they have examined in their leaders and the interpersonal connections that have developed between them.

2.5.2 The importance of interpersonal trust

The value of interpersonal trust in sustaining individual and organisational success is becoming increasingly apparent (Dirks & Ferrin, 2002). The trust has gained the attention of many scholars and researchers. Goodwin et al. (2011) note in their research that there is a clear implication for the effect of trust on followers' behaviour, since it has been highlighted in many publications in respected management journals (Covey, 2013; Kouzes & Posner, 2008). Furthermore, it has been found in many scholarly articles as well (Mulder et al., 2009).

Trust is viewed as a continual, interpersonal link between employees at work (Bligh, 2017). Nyhan (2000) notes that trust is a measure of how much one person believes in another's ability and willingness to perform with a fair, ethical, and predictable approach. Le et al. (2018) argue that mutual understanding and respect between two individuals is required to overcome their weaknesses. Confidence in leadership was seen as a fundamental component of leader–follower interactions impacting major organisational outcomes in the workplace. Dirks and Ferrin (2002) state that a range of productivity-related processes and results, including the collaboration and problem-solving effectiveness, free will, and work engagement, are connected to workers' confidence in

their leaders. Bennis (2002) and Bligh (2017) both argue that successful leadership methods are reflected in people's trust in their leaders. Moreover, the views employees have of a leader's character and actions help to build and maintain employee trust. Trust of leaders is also directly related to team performance (Dirks, 2000), as well as bottom line indicators of organisational performance, such as sales levels and net profits (Davis et al., 2000). Trust is also a major contributor to organisational competitiveness, as it cannot be easily imitated or replicated (Jones & George, 1998). Fairholm (1994, p.98) succinctly summarises the importance of trust in leaders, stating: "... no organisation can take place without interpersonal trust, and no organisational leader can ignore the powerful element of trust".

The primary role of trust is not only focused on gaining success and competitive advantage but is also at the core of relationships and impacts the conduct of each individual (Robinson, 1996). Further to this, Mayer et al. (1995) state that the connection between a leader and a follower is no exception. When followers have faith in their leaders, they are willing to be open to their leaders' actions because they know their best interests will be kept in mind. However, if this trust is damaged, it can have a serious effect (Dirks & Ferrin, 2002).

Transformational leaders become role models for their followers in the process of encouraging them to pursue their shared vision, displaying what it takes to endure and make self-sacrifices when necessary (Jung & Avolio, 2000). Because of their leaders' personal dedication to attaining their goals, followers gain trust in them via observation. Transformational leaders also inspire and empower their followers to think for themselves, which builds trust in the leader. Transformational leadership might entail shifting followers from the known to the unknown. Followers may experience increased degrees of dread,

worry, frustration, and uncertainty, all of which can be mitigated by their leaders' trust (Bass & Avolio, 1994; Kotter, 1996).

Covey (2013) notes that trust between leaders and followers has several advantages. A trusted leader may have an edge over leaders who are not trusted by their followers. Furthermore, leaders are seen to have the most significant role in creating and developing trust in teams and organisations. This is especially true in teams and organisations where activities are complicated and unstructured, and where high degrees of interdependence, collaboration, and information sharing are required (McAllister, 1995; Creed & Miles, 1996).

According to Covey (2008), when trust is lacking, relationships and organisations incur a 'trust tax' as a result of a lack of transparency, hidden agendas, and inefficient organisational politics. When followers trust their leaders, they may demonstrate greater organisational citizenship behaviour, which better equips the leader to achieve the organisation's purpose (Colquitt et al., 2007; McAllister, 1995). De Tienne et al. (2004) argue that when people communicate and interact to synthesise their knowledge, knowledge is transformed and then distributed when accepted information and skills are utilised repeatedly and are later included in the standards and value or culture of the business.

Additionally, Donate and de Pablo (2015) argue that integration happens when an organisation properly gathers external knowledge and combines it with internal knowledge. Consequently, Davenport and Prusak (1998) argue that knowledge initiatives will fail if they lack trust, regardless of how well they are backed by technology or language. Thus, when building trust between leaders and followers, followers become ready to discuss their leaders' actions without the fear of being abused because of their

interest (Mayer et al., 1995). Finally, Dirks and Ferrin (2002) state that a breakdown in trust between followers and leaders can negatively influence the organisation.

2.6 The importance of innovation and leadership in achieving competitive advantage

In order to obtain a competitive advantage, innovation is pivotal (Tidd and Bessant, 2011). Organisations are profoundly focused on innovation due to its important role in achieving competitive advantages (Sarros et al., 2008; Schilling, 2010). Varis and Littunen (2010) contending the significance of applying innovation within organisations as it impacts employees and overall organisational performance. Researchers such as Varis and Littunen(2010) and Walker (2007) argued that innovation helps in improving problem-solving by introducing new ideas and thoughts.

In addition, it was argued that innovation is considered a power for organisations, and it plays a fundamental role in achieving long-term goals. Also, it was recognised that innovation is vital to compete in the market and can present a modern market and improve the viability of organisations (De Jong & Hartog, 2007; Kamasak & Bulutar, 2010; Sarros et al., 2008). Tidd and Bessant (2011) noted that innovation is a critical component of economic growth, permitting businesses to expand more rapidly and beneficially.

The subject of empowering employees' innovative performance has been the subject of several research studies in the field of human resources. This subject appeals to both practitioners and academics with an interest in business management in general and

human resources management in particular. There is a need to consider this because there are many companies' practises that affect employee performance, which eventually has an impact on organisational performance (Farrukh et al., 2021; Rehman et al., 2021).

The banking sector is a key source of a country's economic growth, specifically in developing countries (Al-abadallat, 2017). Within developing countries like Jordan, the banking sector faces major challenges due to fast changing economic scenarios. By adopting an innovative approach, organisations can achieve a competitive advantage and stay ahead of their competitors. Moreover, the banking sector in Jordan plays a fundamental role in supporting the economy and its development (Al-abadallat, 2017). Despite later emergencies and crises, such as the global financial crisis in 2008, the Arab spring in 2011, and the most recent crisis, COVID-19, the banking sector in Jordan started declining. However, by adopting innovative practices, the Jordanian banking sector managed to thrive by regulating their capital, regulating higher flexibility, and maintaining expansion and growth. In spite of current growth, Jordanian banks are deemed relatively weak in creativity (Salaymeh, 2013). With the above discussion, it is evident that the Jordanian banking sector was empirically suited to carry out this research.

The banking sector is chosen as it has become one of the main pillars backing up the country's economy by fostering stability and enhancing economic growth (Al-Fayoumi & Abuzayed, 2009). The achievements of the banking sector have contributed to financial and social stability in Jordan (Association of Banks in Jordan, 2007).

Scholastics and analytics have proposed that innovative performance is associated with an effective leadership style that can make and build work links and interactions between

the leader and employees. Furthermore, the literature emphasised the role of leadership in fostering an innovative mindset to help employees improve their performance and provide value to their employing organisations (Northouse, 2007). Moreover, Schermerhorn (2008) noted that good leadership entails the ability to adopt changes in response to environmental pressures. Good leadership also plays a vital role in solving an organisation's problems (Yukl, 2013). Yukl and Mahsud (2010) emphasise the impact of good leadership on organisational performance, stating that leaders who can anticipate future actions and environmental changes will lead to organisational success. Furthermore, the major tasks of leadership in firms are to establish high performance and improve the organisation's performance (Bertocci, 2009). Mittal and Dhar (2015) noted that one of the most critical elements impacting the positive or negative effects of innovation has been identified as a leadership style (further discussion on leadership style is in Chapter 3).

In this respect, this study targeted the Jordanian banking sector to examine the impact of a transformational leadership style on innovation performance. This research focuses on TL due to the significance that recent literature attributes to this style in influencing organisational outcomes. For example, it can affect managerial operations, knowledge capital, innovation performance, and social capital (Jia et al., 2018; Birasnav et al., 2011; Nguyen et al., 2017). However, transformational leadership is usually regarded as the most admired leadership style. Individuals that practise transformational leadership typically encourage their colleagues through great communication and the creation of an intellectually stimulating workplace (Chan et al., 2019). These leaders are frequently referred to as "blue-sky thinkers," which indicates that they are creative thinkers who may require the assistance of a large number of detail-oriented managers to achieve their

strategic goals (McCleskey, 2014). Through collaboration and shared interest, managers work together to achieve a common objective (García-Morales et al., 2012).

An additional advantage of adopting transformational leadership is that transformational leadership alters the attitudes, personal behaviours, and tentativeness of an organisation's employees. This attitude further fosters the employees' ability to work with a common mindset and work towards achieving a common organisational objective. Hence, all the employees eventually contribute to achieving organisational goals (García-Morales et al., 2008). As a result, this leadership style is more likely to produce exceptional results than other leadership styles (Bass & Avolio, 1994).

One of the objectives of this study is to investigate the mediation role of knowledge sharing and interpersonal trust in transformational leadership and innovation.

As discussed earlier, mediation mechanisms can serve as an efficient association between TL and product and process innovation. This understanding enhances knowledge of how transformational leadership can shape innovative performance. As the literature presented empirical evidence for the importance of TL in successfully fostering knowledge sharing among employees, this study hypothesised two mediation factors, i.e., knowledge sharing and interpersonal trust (Al-Husseini et al., 2021; Yadav et al., 2019; Le & Lei, 2019; Le et al., 2018; Masa'deh et al., 2016; Birasnav et al., 2011; Bass & Avolio, 2000, Le & Lei, 2018; Gillespie & Mann, 2004; Hui et al., 2018; Zhu et al., 2013). This empirical evidence also suggests that TL also has a role in influencing interpersonal trust that establishes a reliable link between employees and their leaders and promotes knowledge sharing. Thus, through two mediation roles, this study examines the impact of

TL practices by leaders in the Jordanian banking sector on fostering innovation performance.

2.7 Summary

A comprehensive theoretical background regarding transformational leadership, knowledge sharing, interpersonal trust, and innovation has been provided within this chapter. Leadership concept have been studied by different researcher for many years. Thus, leading to several schools of leadership theory, such as (Path-goal theory, transformational leadership and transactional leadership theory, the trait approach, contingency theory). Furthermore, after looking into leadership literature, it was found that employing the Bass's Transformational and transactional leadership theory is the most suitable theory for practicing within organisations especially in the banking sector. Transformational leadership improves the follower's capability to achieve the organisations goals and objectives. As noted earlier, through idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration, leaders can encourage their employees to improve their individual performance which will reflect on the organisation overall performance.

Knowledge is considered as one of the important economic resources. Researchers have distinguished between tacit knowledge (know-how) and explicit knowledge (Know-what). As noted earlier, knowledge is an important key for supporting economic. Therefore, the concept of knowledge management is vital. It was found that knowledge management can promote the collaborative environment within organisations and also, facilitate the access to expertise. Furthermore, employing the knowledge management within the organisation help leaders in taking decision and also, lessening the likelihood of making

mistakes at work. However, to enable knowledge sharing, businesses have been urged to engage in knowledge management methods.

Knowledge sharing is an important factor that effect the employee's ability in completing their jobs and, in enhancing the employee's self- knowledge. Moreover, Knowledge sharing has been claimed by several academics to promote a range of employment outcomes, including employee creativity, team creativity, and company inventive capabilities. knowledge sharing is essential for enhancing creativity and strengthening the organisation's competitive advantages. Furthermore, it may be impractical to assume that all staff are willing to share their knowledge. employees sometimes hide information for a variety of reasons, including protecting their own interests, such as avoiding work intensification.

Interpersonal trust is one of the characteristics that contributes to organisational social order. Interpersonal trust is described as the willingness to ascribe good intentions to others and have faith in their words and behaviour. Interpersonal trust is also highlighted as a factor of inventive behaviour among employees and a driver of innovation capabilities. The value of interpersonal trust in sustaining team and organisational success is becoming increasingly apparent. Moreover, the research differentiates between to styles of trust cognitive-based trust and effect-based trust.

Innovation is considered one of the most essential elements for organisations to focus on due to its role in gaining success and achieving competitive advantages. Furthermore, by applying innovation within organisations, the employee's and the organisational

performance will be affected in a positive manner. Innovation also, improve the decision making and problem solving. The notion of innovation originally appeared in the literature when Schumpeter (1983) defined it as the production of new products and services, brands, and processes, as well as their impact on economic progress. Innovation is a tough concept to define since it is so complicated. Part of this complexity stems from the fact that innovation differs depending on the type of organisation. In addition, it might have a diverse meaning based on the organisation's field (Choi & Lee, 2002).

Additionally, in order to understand the organisation, it is important to recognise that there are several types of innovation. Several authors have described the different forms of innovation in several ways and under various titles such as (Front-end innovation/ back-end innovation; Top-down (administrative) innovation/ bottom-up (technological) innovation; Radical and incremental innovation). Product and process innovation considered crucial for organisations as the two concepts are the heart of all innovation type. It was argued that these types of innovation improve an organisation ability to solve problems and enhances its overall performance.

Chapter 3: CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

3.1 Introduction

The findings of the preceding chapter (i.e., literature review) imply that more study is needed. It was discovered that TL, KS, and IT are important elements in enhancing organisational creativity and innovation. As a result, there is a need to investigate such a link in the banking industry within a developing country like Jordan.

This chapter purpose a conceptual model for this study and highlights the research challenge that will be examined in this thesis. It explains the relationships between TL and innovation; TL and KS; KS and innovation; TL and IT; and lastly, IT and innovation. It also explains the mediating role of KS in the TL-innovation relationship, as well as the mediating role of IT in the TL-innovation relationship.

3.2 The Current Scenario of the Jordanian banking Sector

The Jordanian banking sector is an important pillar of the country's economy. It consists of 25 banks, including 14 local banks, 10 foreign banks, and one Islamic bank. The sector is regulated by the Central Bank of Jordan (CBJ), which is responsible for ensuring the stability of the financial system (Central Bank of Jordan, 2021). The banking sector in Jordan has been affected by the COVID-19 pandemic, as has been the case with other sectors worldwide (World Bank, 2020). The pandemic has caused a significant decline in economic activity, and the banking sector has had to adjust its operations accordingly (Al Ghad, 2021). Many banks have implemented measures such as remote working, reduced working hours, and temporary closures of branches to help contain the spread of the virus.

Despite the challenges posed by the pandemic, the Jordanian banking sector has remained resilient. The CBJ has implemented a number of measures to support the sector, including providing liquidity support to banks and allowing them to postpone loan payments for affected businesses and individuals. Additionally, the CBJ has lowered interest rates to encourage borrowing and investment (Central Bank of Jordan, 2021).

In terms of leadership in the banking sector, there have been some changes in recent years. banking sector is moving towards a transformational leadership style, Transformational leadership is characterized by leaders who inspire and motivate their followers to achieve their full potential, rather than simply giving orders and delegating tasks (Busari et al., 2019). Transformational leaders are focused on innovation and change and are willing to take risks to achieve their goals. They also place a high value on building strong relationships with their followers and fostering a sense of teamwork and collaboration (Busari et al.,2019)

The emphasis on innovation, customer-centricity, and collaboration in the Jordanian banking sector suggests that transformational leadership is becoming more prevalent. This is particularly evident in the reforms implemented by Ziad Fariz, which have focused on promoting transparency, risk management, and the use of new technologies. Fariz has also encouraged collaboration and communication between banks and other stakeholders in the financial sector, which is another key characteristic of transformational leadership (Central Bank of Jordan, 2021).

Overall, while there may still be some elements of a hierarchical and bureaucratic leadership style in the Jordanian banking sector, the emphasis on innovation, customer-centricity, and collaboration suggests that transformational leadership is becoming more prominent.

3.3 The Research Conceptual Model

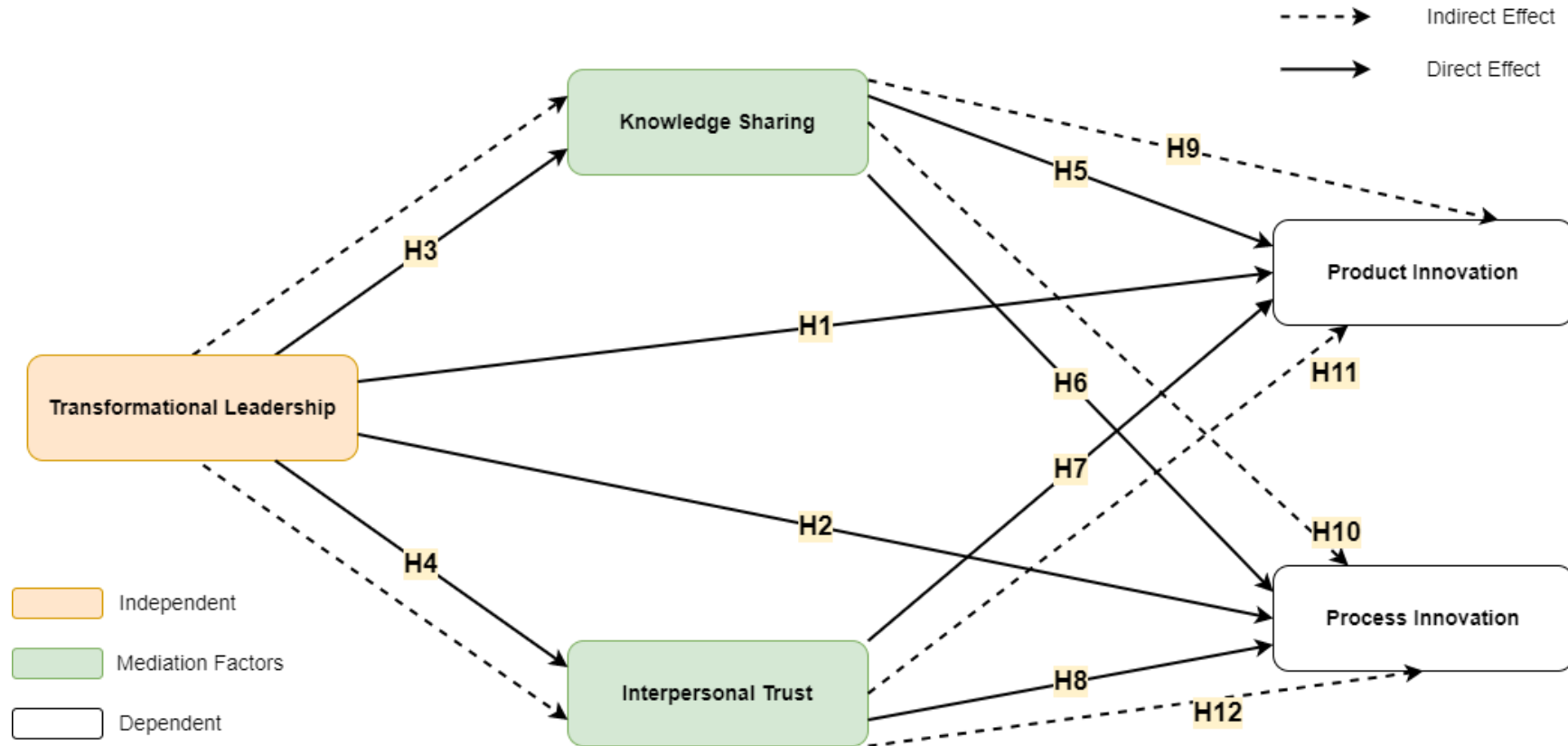


Figure 3.1 Conceptual Model.

3.4 Transformational leadership and Innovation

Transformational leadership is an important concept affecting organisational outcomes. For example, it can affect managerial operations, knowledge capital, innovation performance, and social capital (Birasnav et al., 2013; Nguyen et al., 2017; Jia et al., 2018). Additionally, Bass (1985) argues that transformational leadership contains four characteristics: idealised influence; intellectual stimulation; inspirational motivation; and individualised consideration.

Idealised influence refers to the ability to introduce a new vision and awareness of the mission, to encourage self-esteem, and the ability to gain the respect and trust of others. Intellectual stimulation represents the skills of fostering intelligence and rationality and thoughtful problem-solving. Furthermore, leaders represent inspirational motivation when they are engaged in conveying high expectations, focusing efforts on symbols, and expressing significant goals in straightforward ways. And finally, individualised consideration refers to paying attention to each employee and the way one treats them, as well as giving them appropriate advice.

Transformational leadership theory is considered another powerful leadership theory and has attracted many scholars (Le and Lei, 2017). Thus, it is important to examine the relationship between transformational leadership and product and process innovation, as it will have a useful impact on both fields' leadership and innovation. Hogan and Coote (2014) state that at both national and corporate levels, innovation is a primary engine of economic development and plays a critical role in competitiveness. Innovation is described as the ability to create new goods, services, work processes, and management procedures to obtain a competitive edge for business (Drucker, 2014).

Additionally, various scholars and researchers (Tsai et al., 2001; Lee et al., 2013; Podrug et al., 2017; Liao et al., 2017) have noted that product and process innovation are two essential types (or important capabilities) of innovation in complicated and rapidly changing business settings and are acknowledged as two fundamental types or critical capabilities of innovation in complex and rapidly changing company contexts. Thus, this study investigates the impact of transformational leadership on innovation, namely product and process innovation.

The capacity of a business to provide distinctive or novel products/services in the market to satisfy consumers is referred to as product innovation (Gómez-Prado et al., 2022). Process innovation, on the other hand, refers to an organisation's capacity to provide better processes than its existing operation and thus improve performance (Tsai et al., 2001). However, the authors suggested that transformational leaders' traits are the major elements that directly or indirectly impact innovation capabilities.

According to Prasad and Junni (2016), TL will be able to convince and encourage people about the need for change and innovation by using idealised influence. This also provides assurance that employees will support and respond positively to the innovative endeavours transformational leaders. Transformational leaders inspire people to go above and beyond the call of duty and achieve company goals by delivering inspiring motivation (Le et al., 2018; Peng et al., 2021). TL may push workers to be more proactive and creative in developing new ideas and solutions connected to the firm's products and processes by highlighting the importance of boosting innovation capability as a strategic goal.

By concentrating on intellectual stimulation, transformational leaders boost workers' motivation and capacity to think beyond and outside the box, thus offering the company

a high degree of vision and making people more eager to commit to attaining the objective effectively (Choi et al., 2016; Le & Lei, 2019). Therefore, to fulfil goals and the organisation's vision, TL can promote and challenge people to innovate and enhance current goods, processes, and organisational structures. Transformational leaders encourage the development of workers' capacities and provide them with learning opportunities, which are the primary sources of developing employees' creative thinking (Bass & Bass, 2009; Prasad & Junni, 2016). Transformational leadership can increase employees' desire to take on more responsibility in organisations.

Additionally, other scholars (Prasad & Junni, 2016; Gumusluoglu & Ilsey, 2009; Khan et al., 2009) have argued that by paying attention to the employees' personal needs and supporting them, transformational leadership will enhance the climate for innovative performance. Followers will also respond with innovation more rapidly (Prasad & Junni, 2016; Gumusluoglu & Ilsey, 2009; Khan et al., 2009).

Transformational leaders play a critical role in encouraging innovation by creating an atmosphere that encourages the development of skills and practises that improve innovation (Le and Lei, 2019). Positive relationships between transformational leadership and innovation have been mentioned in previous studies (Gumusluoğlu and Ilsev, 2009; Garcí a-Morales et al., 2012; Trung et al., 2014; Prasad and Junni et al., 2016; Yang and Yang, 2019; Al-Husseini et al., 2019; Le and Lei, 2019; Rasheed et al., 2021;).

For instance, Garcí a Morales et al. (2012) note that TL's behaviour has been shown to improve a firm's innovation capacity, either directly or indirectly, via improving the firm's learning capabilities. Prasad and Junni (2016) point out that there is a positive link between transformational leadership, innovative employee behaviours, and organisational innovation. Trung et al. (2014) mention that TL is critical in creating an

environment in the workplace that encourages experimentation and the adoption of new ideas, methods, procedures, or structures.

Additionally, Rasheed et al. (2021) found that transformational leadership positively impacts process and product innovation in SMEs. Yang and Yang (2019) note that firms under transformational leadership are more likely to conduct process innovation. Gumusluoglu and Ilsev (2009) found that transformational leadership has a beneficial influence on organisational innovation, and his research shows that it is a key factor in organisational innovation and urges managers to participate in transformational leadership behaviours to foster organisational innovation.

Al-Husseini et al. (2019) note that transformational leadership is an important factor that affects innovation. According to Le and Lei (2019), KS mediates the effects of TL on innovative capacities. Furthermore, the effects of TL and KS on different dimensions of innovative potential vary depending on the level of employees' POS.

Although the above reasons suggest a positive association between TL and innovation capability, empirical data on the relationship between TL and two particular components of innovation capability, namely product and process innovation, remains limited within the banking industry. Therefore, the researcher develops the following hypothesis to better understand the link between these constructs:

H₁: TL positively influences product innovation.

H₂: TL positively influences process innovation.

3.5 Transformational Leadership and Knowledge Sharing

Le and Lei (2019) note that one of the highest-ranking leadership styles has been identified to be transformational leadership, which refers to leaders who can inspire people to think outside the box to achieve any required goals and objectives by motivating them to attain the greatest levels of success and outcomes. Le and Lei (2017) argue that TL encourages people to put their interests aside for the welfare of the company, and that it serves as the company's driving force, prioritises employee skill development, and relentlessly seeks new opportunities. Le and Lei (2017) further note that in most firms, knowledge and knowledge management capabilities are critical pillars of success.

As a result, it is critical to improve a firm's ability to discover, gather, share, apply, and transform knowledge capital into reality in the firm's outcomes. In the process of knowledge management, KS plays a critical role (Le et al., 2018; Pee & Min, 2017). Moreover, Le and Lei (2017) state that the success of knowledge management initiatives is determined by the effectiveness of knowledge sharing activities in an organisation. Also, Lin (2008) and Van de Hooff and Ridder (2004) argue that knowledge sharing enhances the company's ability to handle knowledge and helps people work more efficiently and achieve their objectives. Knowledge sharing is described as the practise of individuals exchanging knowledge and experience to empower and support each other with new and important knowledge and skills to attain the organisation's goals (Lin, 2008; Van den Hooff & De Ridder, 2004).

Additionally, TL, according to Le and Lei (2017), has a significant impact on a company's knowledge capital and on crucial outcomes. Examining the influence of TL on specific forms of KS has important consequences for academics and specialists who wish to better understand the circumstances to improve employees' KS behaviours at work. Xiao

et al. (2017) explain that employee knowledge sharing is crucial for increasing the firm's knowledge capital. It does not, however, occur at random. However, Wang and Noe (2010) note that individual knowledge is difficult to translate into organisational knowledge because people are hesitant to share their unique expertise for fear of losing information and rewards at work.

Han et al. (2016) argue that leadership is viewed as a critical component among the fundamental aspects of knowledge sharing, and that it has a close relationship and decisive influence on knowledge sharing. Similarly, Le and Lei (2018) note that one of the most effective leadership styles for improving KS activities and developing a culture that supports open and honest communication among employees is transformational leadership.

Transformational leaders, according to Jensen et al. (2020), may motivate others to achieve their best levels of achievement and results. Transformational leaders help to internalise and integrate information into an organisation's activities by facilitating the interchange, transmission, and application of additional knowledge that is beneficial and useful for knowledge production (Chang et al., 2018). Transformational leaders also strengthen knowledge of the donation process, which refers to an individual's willingness to communicate or provide individual intellectual capital to co-workers on a voluntary and proactive basis (Le & Lei, 2017).

Lei et al. (2019) state that this process happens only in certain situations when leadership's influence and support have a significant impact on the volume and intensity of knowledge sharing. Transformational leadership expands a set of values and expectations associated with knowledge and information exchange, hence facilitating knowledge sharing (Birasnav et al., 2013). Masa'deh et al. (2016) found that

transformational leaders focus on building a vision and a sense of mission, as well as promoting a culture of trust and organisational justice, which are all key in generating KS among employees. Similarly, Choi et al. (2020) explain that employees also effectively interact and gather knowledge with their co-workers to innovate.

Additionally, when individuals work with transformational leaders, they become more imaginative and are able to share their expertise and experience with others (Xiao et al., 2017). Le and Lei (2019) argue that TL promotes a healthy work atmosphere and provides the resources necessary for employees to participate in KS activities. The above considerations emphasise the importance of TL in KS activity. However, the link between transformational leadership and knowledge sharing is still limited and insufficient (Le & Lei, 2018b).

Many researchers and scholars note that support for transformational leadership facilitates KS behaviours among the organisation's employees (Bass & Avolio, 2000; Birasnav et al., 2011; Masa'deh et al., 2016; Le et al., 2018; Al-Husseini et al., 2019; Yadav et al., 2019; Le & Lei, 2019; Chaar & Easa, 2020). For instance, Al-Husseini et al. (2019) used a 250-person survey to examine the relationship between transformational leadership and knowledge sharing and innovation in higher education. They found a positive direct impact between transformational leadership and knowledge sharing and innovation. Furthermore, knowledge sharing was identified as a mediator between transformational leadership and innovation. Yadav et al. (2019) found that transformational leadership influenced knowledge-collecting and knowledge-donating behaviour among freelancers.

Similarly, Le and Lei (2019) found a positive relationship between transformational leadership and knowledge sharing, and also found that knowledge sharing mediates

transformational leadership's effects on innovation capabilities. Le et al. (2018) note that transformational leadership is one of the most important styles of leadership that supports the facilitation of the knowledge sharing process.

According to Masa'deh et al. (2016), TL practice is vital when creating a healthy climate for KS by concentrating on enhancing employees' intellectual capital, offering a vision and a sense of mission, and in gaining followers' respect and trust. Moreover, Birasnav et al. (2011) state that TL places a high value on creating a knowledgeable and supportive culture to develop and foster workers' favourable attitudes towards KS. According to Bass and Avolio (2000), transformational leaders' characteristics (such as charisma, inspiring motivation, and intellectual stimulation) inspire people to communicate and share information.

Although the above reasons suggest a positive association between TL and knowledge sharing, empirical data on the relationship between TL and knowledge sharing remains limited within the banking industry. Therefore, the researcher has developed the following hypothesis to better understand the link between these constructs:

H3: TL positively influences knowledge sharing.

3.6 Transformational Leadership and Interpersonal Trust

Transformational leadership is identified, according to Le and Lei (2017), as the way that leaders pay attention to the organisational goals and the best method of communicating these goals. Transformational leaders take the responsibility of being in charge, participating in practical coaching, supporting new skills improvement among employees and are continually looking for new opportunities to help the organisation grow (Le and Lei, 2017; Garcia Morales et al., 2008). Bass and Avolio (1990) argue that

transformational leadership occurs when a leader expands and elevates the interests of his or her employees. Also, leaders increase awareness and acceptance of the organisation's goals and mission, and motivate individuals to look beyond their self-interest for the good of the group (Bass & Avolio, 1990). Yammarino and Bass (1990) note that transformational leaders encourage organisational commitment by connecting subordinates' principles, beliefs, and intentions with the group, along with the leader and the aim of an organisation (Barling et al., 1996; Bass & Avolio, 1990).

Additionally, Le and Lei (2018) indicated the important role transformational leadership plays in building up the subordinate's trust in their leaders, which is a crucial way to achieve a competitive edge via encouraging knowledge sharing between employees. Moreover, Bass (1985) and Judge and Piccolo (2004) note that this is achieved by making followers aware of the value of job outcomes, directing them toward exceeding expectations, stimulating higher-order substantial needs, and concentrating on their ability to control, rather than their dependency. Bass (1985) acknowledged the four elements of transformational leadership: 'idealised influence'; 'Inspirational motivation', 'intellectual stimulation'; and 'individualised consideration'.

The ability to introduce a new vision and awareness of the mission, encourage self-esteem, and the ability to gain the respect and trust of others is what idealised influence refers to (Bass, 1985). A leader's exemplary behaviour and ability to set the group's interests ahead of personal gain should develop emotional ties among leaders and followers, leading to increased affective trust. Leaders who show their ability to abandon self-gains for collective aims and keep uniformity in their words and actions are more likely to be seen as trustworthy and have a greater level of cognitive trust from their subordinates (Kirkpatrick & Locke, 1996; Jung & Avolio, 2000).

Equally, by demonstrating intellectual stimulation, transformational leaders should generate a greater level of trust in subordinates. In addition, through inspiring and fostering employee innovation, leaders encourage followers to be engaged in decision-making procedures. Moreover, leaders encourage followers to get involved in decisions that may affect them and their performance. By doing so, leaders show their respect for followers and their readiness for a social exchange environment (Avolio & Bass, 2002). As a result, the emotional link between leaders and followers should develop, leading to an increase in the affective trust level. Also, it is expected that this will foster the cognitive trust level, which improves followers' opinions of their leader's competence, honesty, and reliability.

Leaders who are engaged in conveying high expectations, focusing their efforts on symbols, and expressing significant goals in straightforward ways, according to Bass (1985) and Avolio (1999), represent inspirational motivation. Leaders who practise inspirational motivation focus on enhancing their followers' trust (Bass, 1985; Avolio, 1999). Pillai et al. (1999) note that followers who have good knowledge of a leader's goals and how their actions might contribute to their success will be more motivated to engage in a social exchange process. Thus, a higher level of effective trust must be attained. In addition, Lewicki and Stevensonr (1997) argue that affective trust should also be built when followers have a deeper grasp of and adoption of an inspirational leader's ideals, which should strengthen their emotional link. Furthermore, if the leaders are successful in realising their vision, then this will improve followers' perceptions of their boss as a capable, trustworthy, and reliable leader who effectively achieves organisational goals, resulting in cognitive trust.

The capacity of a transformational leader to offer individualised consideration to his or her followers should result in higher levels of trust among those who follow him or her (Jung and Avolio, 2000). Transformational leaders who show concern for their followers' well-being, desires, and who help them secure employment will strengthen the emotional tie between them and instil advanced trust levels, because this trust will be based on a follower's belief that the leader honestly cares about them and acts in their best interests (Bass, 1985; Dirks & Ferrin, 2002). Individualized consideration is also projected to increase adherent perceptions of the personality of the leader in terms of competence, dependability, and honesty, resulting in higher levels of cognitive trust (Dirks & Ferrin, 2002).

Additionally, McAllister (1995) explained that individual and organisational performance depends on interpersonal trust. Trust is especially vital in situations where one party is in danger or is vulnerable to another. As a result, it is especially important in interactions between subordinates and leaders, who are in distinct positions and have different levels of status and authority by definition (Bligh, 2017). It can be argued that employees gain trust in leaders who practise transformational leadership. This link can be explained by several factors, which will be detailed in the following paragraphs.

Gillespie and Mann (2004) note that when leaders practise idealised influence, they demonstrate that employees can rely on them and trust them. When leaders practise inspirational motivation, employees are more likely to achieve such goals if their leaders encourage them, which can help build trust (Le & Lei, 2018). Leaders that engage in intellectual stimulation and encourage staff to consider challenges from several angles coach their colleagues, demonstrating a commitment to their growth, which in turn builds

trust (Le & Lei, 2018). Moreover, paying attention to each employee and their ways of treating them, as well as giving them appropriate advice, is what individualised consideration refers to (Bass, 1985). Interpersonal trust is a psychological condition in which one party is prepared to tolerate vulnerability to the acts of another in exchange for the assurance that the other will do something significant that will help. Interpersonal trust may be defined as a shared understanding and respect between two people that assists them in overcoming weaknesses (Six, 2007).

However, empirical scholars have paid little attention to the link between transformational leadership and interpersonal trust. These relationships have been clearly articulated in various prior studies. For example, Le and Lei (2018) found that transformational leadership is favourably connected to interpersonal trust in both reliance-based trust (willingness to rely on another's work-related skills, talents, and knowledge) and disclosure-based trust, according to the research (ready to disclose work-related sensitive aspects or personal opinions and information to others). Gillespie and Mann (2004) note that transformational leadership and interpersonal trust are inextricably linked. In addition, the findings of Hui et al. (2018) emphasise the need for transformational leadership to create employee trust and, ultimately, to improve a firm's innovation capabilities. In Zhu et al. (2013), transformational leadership was found to lead to greater levels of cognitive and emotional trust.

Although the above reasons suggest a positive association between TL and interpersonal trust, empirical data on the relationship between TL and interpersonal trust remains limited within the banking industry. Therefore, the researcher has developed the following hypothesis to better understand the link between these constructs:

H4: TL positively influences interpersonal trust.

3.7 Knowledge Sharing and Innovation

Many researchers (Nonaka & Toyama, 2005; Mearns, 2012; Al-Husseini et al., 2019), suggest that the knowledge-based perspective accepts that knowledge is a vital resource for businesses. Von Krogh et al. (2012) note that knowledge and KM have become more important in the study of organisational innovation. Also, it is critical to establish a KS culture while considering the implementation of KM activities (Hislop, 2013). Moreover, it was noted by Clayton (2020) that KS is a collaborative process in which people exchange and share tacit and explicit knowledge, Knowledge is generally recognised as being at the heart of creativity. Researchers indicate that by practising a KM process in general and KS specifically, the organisation will be able to create new opportunities to engender innovative ideas and enhance innovation (Willem & Buelens, 2007; Lin et al., 2009; Clayton, 2020). Because of the nature of knowledge, researchers such as Teece (2008) and Grant (1996) believe that KS and its aspects (donating and collecting) are the most important factors that influence innovation.

Additionally, Rodan and Galunic (2004) explain that by having access to knowledge, the organisation's employees may have the chance to help the organisation in developing new approaches to work out problems and engage in more innovative actions. Tsai (2001) notes that product and process innovation have been proven to address issues and increase organisational performance. According to the knowledge-based perspective, it is important to practise knowledge creation in organisations but, more importantly, knowledge sharing, since new knowledge is considered to be an important factor in improving new product ideas. Also, employees' skills and knowledge play a vital role in value creation and innovation (Tsai, 2001; Alavi & Leidner, 2001; Skerlavaja et al., 2010).

Developing new routines and mental processes to assist employees to develop solutions is contingent on sharing embedded knowledge among them (Cheng, 2012). Furthermore, knowledge sharing between organisational members plays a critical role in improving collective learning and enhancing the stock of knowledge accessible to the firm by transferring the tacit knowledge into explicit through collecting and donating (Lin, 2007; Nonaka & Toyama, 2005). Promoting KS behaviours among a firm's employees allow them to gain new innovative ideas that lead to product and process innovation, and this has been noted by many previous researchers (Asrar-ul-Haq et al., 2016; Dong et al., 2017; Anwar et al., 2019).

Furthermore, employees may adapt and apply current knowledge in advanced ways through knowledge activities to modify and improve their duties, which in turn creates new knowledge that can be used for product and process innovation.

Previous research on the link between KS and innovation capability has confirmed the importance of KS in supporting and increasing innovative capacities (Wang & Wang, 2012; Zheng et al., 2017; Le & Lei, 2018; Al-Husseini et al., 2019; Usmanova et al., 2020; Le & Le, 2021). However, Jantunen (2005) suggests that employees' KS behaviour can help companies innovate more effectively. Wang and Wang (2012) state that because innovation projects rely heavily on workers' knowledge and expertise in the process of generating value, as well as their capacity to convert and apply knowledge in the production of products and services, the KS process aids innovation in teams, units, and the entire company. The act of sharing information, experience, and talent is at the heart of most innovation projects, and a company's capacity to convert and apply knowledge can determine its level of innovation capabilities in both product and process innovation. (Lee et al., 2013).

Le and Le (2021) demonstrated in their study that knowledge sharing behaviours have a key impact on improving organisational innovation performance. In their study, Al-Husseini et al. (2019) showed the importance of knowledge sharing in promoting product and process innovation in Iraqi higher education. Le and Lei (2018) revealed that a firm's knowledge and learning capabilities are positively related to its innovation speed and quality. The findings of Zheng et al. (2017) provide evidence that KS activities are positively related to a company's ability to innovate. According to the findings of Wang et al. (2016), KS has a considerable influence on numerous elements of innovation, including innovation speed and quality. Sáenz et al. (2011) revealed that in Spanish and Colombian high-tech organisations, workers' KS mechanisms are the primary means of improving and establishing a positive effect on innovation capabilities. Additionally, Wang et al. (2017) argue that practising knowledge sharing will allow employees to learn new and different types of knowledge so that they can be more willing to produce new ideas to help the organisation become more innovative. However, more innovation will result from a better a greater amount of knowledge sharing (Wu, 2016).

Although the above reasons suggest a positive association between knowledge sharing and innovation, empirical data on the relationship between knowledge sharing and innovation remains limited within the banking industry. Therefore, the researcher has developed the following hypothesis to better understand the link between these constructs:

H₅: Knowledge sharing positively influences product innovation.

H₆: Knowledge sharing positively influence process innovation.

3.8 Interpersonal Trust and Innovation

Scholars such as Dovey (2009) and Alsharo et al. (2017) note that trust can be found within the relationships between people, and consider trust to be a social capital resource. Furthermore, they argue that trust is essential for the development and maintenance of social interactions as well as the promotion of efficient collaboration. Dovey (2009) states that trust is formed socially based on certain relationships, objectives, and meanings. The importance of trust-based relationships for individual and organisational efficiency has been underlined by improvements in the organisational sciences. Trust-based relationships are the basis for a company's innovation capabilities to be built and developed (McAllister, 1995). Interpersonal trust is a psychological condition in which one party is prepared to accept vulnerability to the acts of another in exchange for the other doing specific and meaningful activities for them (Six, 2007).

According to Mayer et al. (1995), interpersonal trust comprises significant components of risk, vulnerability, and efficiency. In consonance with this aspect, a study conducted by Le and Lei (2018) highlights that employee trust is strongly and highly correlated with knowledge sharing and information exchange, which is critical for organisations to adopt the required adjustments and innovate, since knowledge and learning ability are significantly associated with a firm's innovation capability on two levels: both in terms of the speed and the quality of innovation (Le & Lei, 2018). Furthermore, interpersonal trust is explained by Bligh (2017) as the active links and emotional bonds between the organisation's employees, which are linked to several beneficial firm outcomes, for example, employee satisfaction and organisational performance. Interpersonal trust is stressed as a factor of inventive behaviour among employees and is a driver of innovation capability (Hui et al., 2018).

Porter and Solvell (1998) note that industrial economies were witness to an innovation-driven phase during which the focus was on how corporations could rapidly develop and enhance innovation skills to gain a competitive edge (West & Farr, 1990 as cited in Lei et al., 2019 p.279). Innovation was thus defined as the “intentional introduction and application of new products, processes, procedures, or ideas that are designed to significantly benefit the individual, the group, the organisation, or wider society.” Additionally, innovation was also defined as the ability to generate new goods, services, job processes, and management techniques to attain organisational competitive advantages (Drucker, 2014). Francis and Bessant (2005) describe the innovation capability of an organisation as involving improvements in the products or services that they introduce to the marketplace, as well as the strategy it takes in delivering these products or services.

As the business environment continues to change rapidly, complex forms of product innovation and process innovation are being recognised as crucial capabilities for innovation (Podrug et al., 2017; Lee et al., 2013). Product innovation reveals the organisation's ability to provide unique or new products or services to the marketplace to meet consumer satisfaction. On the other hand, process innovation reflects the organisation's ability to provide a fundamental process to the existing operations, with a view to achieve superior performance. Additionally, distinguishing between product and process innovation is very important. Damanpour and Gopalakrishnan (2001) state that the implementation of product and process innovation requires different skills and resources from organisations. Thus, business leaders and academics have emphasised the need to identify an effective approach to develop innovation skills in product innovation and process innovation (Anderson et al., 2014).

However, in empirical studies, interpersonal trust relationships with the specific features of innovation have earned little attention (Hui et al., 2018), despite the fact that research indicates that interpersonal trust increases innovation abilities. Murphy (2002) argues for the important role of trust in building social relationships and its role in enhancing effective knowledge sharing, encouraging capacity building, promoting mutual learning, and finally in promoting employees' motivation to be innovative. Scholars such as Martins and Martins (2002) note that applying trust in the interpersonal relationship will help in promoting the KS culture and will create a positive cooperative environment for fostering creativity and innovation abilities (Zhang et al., 2018). Lei et al. (2019) claim that for KS activities to be as efficient and as effective as possible, interpersonal trust is an essential component of social relationships. Furthermore, various innovation abilities depend significantly on interpersonal trust, such as product innovation and process innovation (Golipour et al., 2011).

Furthermore, in the process of producing and applying fresh ideas, interpersonal trust grows to become particularly important in light of the uncertainty and risks involved (Shazi et al., 2015). Although interpersonal trust is frequently considered important in boosting innovation potential, there is a lack of research and expertise in the area of the relationship between interpersonal trust and innovative capacity features (Hui et al., 2018).

Although the above reasons suggest a positive association between interpersonal trust and innovation, empirical data on the relationship between interpersonal trust and innovation remains limited within the banking industry. Therefore, the researcher has developed the following hypotheses to better understand the link between these constructs:

H₇: Interpersonal trust positively influences product innovation.

H₈: Interpersonal trust positively influence process innovation.

3.9 The Mediating Effect of KS in the Relationship Between TL-Innovation

After exploring the relationship between transformational leadership and knowledge sharing, as well as the association between knowledge sharing and innovation, it is suggested that transformational leadership impacts innovation through its impact on knowledge sharing. Castaneda and Cuellar (2020) state that modern infrastructure, technology, and economic resources all support innovation, but knowledge sharing among employees is the most important factor. Furthermore, Kremer (2019) notes that knowledge sharing is the main factor behind supporting innovation, and it is unlikely that innovation happens without knowledge sharing.

According to Nonaka et al. (2006), knowledge is seen as a critical component of innovation, which is defined as the act of recognising issues and developing new knowledge to address these same issues within organisations (Ahmed & Shepherd, 2010; Verona et al., 2006; Senge, 2006; Brown & Eisenhardt, 1995). Therefore, knowledge sharing will force innovative behaviour from employees, either directly or indirectly, while innovative behaviour requires the continuous examination of present challenges to discover new answers in creative ways. As a consequence, sharing knowledge can help staff focus on current concerns and future challenges (De Jong & Den Hartog, 2007). Moreover, employees are challenged to think outside the box when they share knowledge, which promotes workplace creativity. As previously indicated, information sharing is thought to regulate the relationship between TL and innovative behaviour in a beneficial way (Verona et al., 2006).

TL focuses on developing employee trust, which enhances knowledge sharing between leaders and employees within the organisation (Bass, 1985). TL fosters a collaborative vision that attempts to improve workers' collaboration talents and experience. Moreover, employees are encouraged to share their latent skills by transformational leaders (Dweck, 1986; Vandewalle & Cummings, 1997).

In addition, Xiao et al. (2017) state that the present literature has validated the role of KS as a mediator in the relationship between transformational leadership and different forms of innovation (Choi et al., 2016), as it is considered it to be the main key to enhancing organisational innovation (Le & Lei, 2017; Wang et al., 2017). Moreover, Choi et al. (2016) note that a firm's capacity to acquire and utilise knowledge plays a mediating role in the link between TL and creative behaviour. Although the effectiveness of KS is indeed contingent on individuals' willingness to share information, workers typically wait or are hesitant to provide critical information for fear of losing control (Alsharo et al., 2017). TL plays a critical role in overcoming and addressing these difficulties. Transformational leaders may encourage members to share their important knowledge, skills, and assets, which is a fundamental basis and prerequisite for increasing a company's innovative capabilities (Le & Lei, 2018). Furthermore, it is argued that having strong leadership is critical in creating a conducive environment for revealing knowledge to promote organisational innovation (Uddin et al., 2017). Researchers have discovered that TL substantially enhances an organisation's innovation capabilities and successes by encouraging KS behaviours. Zheng et al. (2017) suggest that KS activities help firms enhance their organisational performance and contribute significantly to their innovation initiatives.

Le and Lei (2019) investigated how transformational leadership affects each area of innovation capability (product and process innovation), and examined the mediating

function of knowledge sharing and the moderating mechanism of perceived organisational support, with a view to have a better understanding of the routes and circumstances for improving certain components of innovation capability. Their findings showed that firms might build a suitable and supportive atmosphere for cultivating KS behaviours to promote product and process innovation under the transformational leadership style. Furthermore, other researchers, such as Lei et al. (2019) found that by utilising transformational leadership, leaders can enhance employee trust, which is critical for stimulating the KS process, thus contributing significantly to the use of knowledge sources for enhancing the implementation of innovation capabilities within organisations (Le et al., 2018; Dost et al., 2019).

Choi et al. (2016) describe how empirical data and the process by which KS mediates the association between TL and innovative capacities are both insufficient. As a result, further research into KS as a mediating element between TL and innovation is critical in improving our understanding of effective pathways for stimulating each facet of innovation capability.

Although the above reasons suggest a positive mediating effect of knowledge sharing between TL and innovation relationships, empirical data on the mediating factor between TL and innovation remains limited within the banking industry. Therefore, the researcher has developed the following hypotheses to better understand the link between these constructs:

H₉: Knowledge sharing mediates the positive impact between TL and product innovation.

H₁₀: Knowledge sharing mediates the positive impact between TL and process innovation.

3.10 The Mediating Effect of Interpersonal Trust in the Relationship Between TL-Innovation

After exploring the relationship between transformational leadership and interpersonal trust, as well as the link between interpersonal trust and innovation, it is suggested that transformational leadership impacts innovation through its impact on interpersonal trust. Dovey (2009) argues that the level of innovation depends on the level of interpersonal trust. Furthermore, trust in a supervisor is positively associated with the follower's innovative behaviour. The effectiveness and calibre of organisational knowledge sharing, and innovation are positively impacted by trust levels (Dovey, 2009). Trust is essential for the development and maintenance of social interactions, as well as for the promotion of efficient collaboration (Alsharo et al., 2017).

Interpersonal trust, according to Bligh (2017), refers to the bonds and emotional links that exist between members of an organisation. These linkages have a variety of positive business impacts, including organisational performance and employee satisfaction. Interpersonal trust is a significant component affecting employees' innovative behaviour and is a facilitator of creativity aptitude (Golipour et al., 2011). Le and Lei (2018) highlight the crucial role that transformational leadership plays in encouraging employee knowledge sharing and increasing subordinates' confidence in their leaders, both of which are essential for gaining a competitive advantage.

The capacity to introduce a fresh vision and knowledge of the purpose, self-esteem and the ability to win the respect and trust of others all contribute to an increase in affective trust when the four qualities of transformational leadership are put into practise (Phung et al., 2019). Additionally, leaders demonstrate their regard for followers and preparation for a social exchange atmosphere by engaging in intellectual stimulation (Avolio and Bass,

1995). As a result, the emotional connection between leaders and followers should grow, increasing both the affective and cognitive levels of trust.

According to Bass (1985) and Avolio (1999), inspiring motivation may be found in leaders who set high standards, concentrate on symbols, and describe important aims in simple terms. The goal of inspiring leaders is to increase their followers' trust (Bass, 1985; Avolio, 1999). According to Pillai et al. (1999), followers who are well-informed about a leader's objectives and how their behaviour may help them achieve those objectives will be more eager to engage in a process of social exchange. As a result, a greater degree of effective trust must be enhanced.

Higher levels of trust among individuals who follow a transformative leader should arise from his or her ability to provide individualised consideration to followers (Jung & Avolio, 2000). Because such trust is based on a follower's conviction that the leader genuinely cares about them and acts in their best interests, transformational leaders who demonstrate concern for their followers' desires, security, and well-being will strengthen the emotional bond between them and instil advanced affective trust levels (Bass, 1985; Dirks & Ferrin, 2002).

However, empirical scholars have paid little attention to the link between transformational leadership, interpersonal trust, and innovation. These relationships have been clearly articulated in various prior studies, such as: Hui et al. (2018), who investigated a successful method for enhancing innovation potential for businesses by looking at the connections between interpersonal trust, transformational leadership style, and innovation capacities of Vietnamese businesses. Moreover, Hui et al. (2018) found that interpersonal trust and transformational leadership have a major impact on innovation

capability. Additionally, the link between transformational leadership and innovation capability is mediated by interpersonal trust.

Although the above reasons suggest a positive mediating effect of interpersonal trust between TL and innovation relationships, empirical data on the mediating factor between TL and innovation remains limited within the banking industry. Therefore, the researcher has developed the following hypothesis to better understand the link between these constructs:

H₁₁: Knowledge sharing mediates the positive impact between TL and process innovation.

H₁₂: Interpersonal trust mediates the positive impact between TL and product innovation.

Table 3.1 Hypothesis summary

Construct	Hypothesis	Hypothesis Statement
TL-Innovation	H1-H2	H1: TL positively influences product innovation. H2: TL positively influences process innovation.
TL-KS	H3	TL positively influences knowledge sharing.
TL-IT	H4	TL positively influences interpersonal trust.
KS-Innovation	H5-H6	H5: KS positively influences product innovation. H6: KS positively influences process innovation.
IT-Innovation	H7-H8	H7: IT positively influences product innovation. H8: IT positively influences process innovation.
TL-KS-Innovation	H9-H10	H9: Knowledge sharing mediates the positive impact between TL and product innovation. H10: Knowledge sharing mediates the positive impact between TL and process innovation
TL-IT-Innovation	H11-H12	H11: Interpersonal trust mediates the positive impact between TL and product innovation. H12: Interpersonal trust mediates the positive impact between TL and product innovation.

3.11 Summary

In this chapter, a number of studies have examined the study construct, transformational leadership, knowledge sharing, interpersonal trust and innovation separately. After a comprehensive examination of the recent literature, these studies explained that there is a lack of empirical studies in studying these constructs together. Particularly, within developing countries like Jordan. Moreover, there is a lack in examining these constructs in the banking sector. Therefore, a specific model is developed for this study, which consist of four constructs: TL (Idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration), knowledge sharing, interpersonal trust, and product and process innovation. Furthermore, by integrating knowledge sharing and interpersonal trust as a mediating factors, this model aims to examine the impact of transformational leadership on product and process innovation within the Jordanian banking sector.

Chapter 4: Methodology Chapter

4.1 Introduction

This chapter is split into two parts. The first part focuses on the methodology that has been adopted to collect data in order to answer the research questions, while the second part focuses on data analysis methods. More specifically, the first part highlights the overall research philosophy and paradigm which underpin this research. What follows is a discussion about the research approach and the methods that have been adopted. The second part describes the descriptive data as well as the process of coding the data on a PC using the Statistical Package for the Social Sciences (SPSS) v(26). This package was also used to complete data screening and establish preliminary analysis requirements. An Exploratory Factor Analysis (EFA) was conducted to examine the underlying structural components for the observed data.

4.2 Research Philosophy

Research philosophy refers to broad-based assumptions that guide a strategy in gaining knowledge about a particular phenomenon in a particular way (Saunders et al., 2019). Adopting a clear philosophical position guides researchers to view the subject through a specific ontological and epistemological lens, which in turn helps the researcher adopt a specific methodological approach. Accordingly, positioning a research project in a specific philosophical standpoint helps minimise methodological error (Kvale, 1996). Researchers can define their research strategy, research technique, and ways of collecting data and examining acquired data, by adopting a particular paradigm. There exists a continuum between positivist and interpretivist philosophies, which are the most prevalent

philosophical methodologies adopted in business and management research (Hughes, 1990; Carson et al., 2001). The two most basic paradigms of social scientific study, positivism and interpretivism, can be compared in various ways. Since the current study examines a causal relationship, it adopts a positivist approach. The positivist paradigm depicts the growth of knowledge, based on theories and the construction of a framework to acquire knowledge. On the other hand, the interpretivism paradigm generates theory and develops a foundation for hypotheses through observation and the investigation of events.

Scholars such as Lune and Berg (2017) and Saunders et al. (2019) argue that the followers of a positivism paradigm believe that reality exists independently of inquiry and that the goal of research is to find ideas that are supported by facts, via observation and experiment. Interpretivists, on the other hand, believe that the only way to acquire access to reality is through social production (Lune & Berg, 2017). Therefore, in order to answer the research questions the positivism paradigm will be adopted.

A discussion surrounding the differences between positivism and interpretivism will be useful in clarifying the guiding philosophy of this research. The nature of reality - referred as ontological presupposition - brings clarity about how a researcher looks at reality (Saunders et al. 2019). Positivism is an objective, singular, and researcher-independent philosophy. Interpretivism, on the other hand, considers reality to be subjective and multifaceted (Collis & Hussey, 2009). Epistemology refers to the validity of knowledge. In terms of epistemological beliefs, positivism indicates that the investigator is unrelated to the subject of study, whereas interpretivism assumes that the researcher interacts with the subject under investigation (Saunders et al., 2019). The function of values is referred to as an axiological assumption. The positivist ideology holds that research is objective

and value-free. Interpretivism, on the other hand, implies that the researcher recognises the importance of the study as well as the presence of biases. The research language used is referred to as the rhetorical premise. Positivism favours a quantitative research approach that identifies causal links in research questions or hypotheses, and thus uses formal language and the passive voice. Interpretivism, the qualitative method, uses the voice of its participants and is written in a conversational tone.

The research process is subject to methodological assumptions. The key processes of positivism involve logical processes, cause and effect, static design, and generalisation, which lead to prediction, explanation, and interpreting outcomes, which makes it a deductive approach (Lune & Berg, 2017; Saunders et al., 2019). The validity and reliability of the findings are checked. In addition, adapting the positivism technique requires a large sample.

On the other hand, inductive research is the most common method used in interpretivism; research develops in parallel with the changing design, whereby the overall context is defined, patterns and theories are constructed to provide knowledge, and dependability is achieved through verification. To acquire a diversity of perspectives on the phenomenon, the researcher uses a small sample size and a variety of approaches. Hence, after explaining the differences between the two paradigms, and in order to answer the research questions, this study adopts the positivism paradigm.

Positivism is a philosophical approach that emphasizes the importance of empirical evidence and scientific methods in understanding the world (Mertens, 2019). Positivism is grounded in the scientific method, positivists believe that knowledge should be based on empirical evidence, which is obtained through observation and experimentation

(Mertens, 2019). This approach is consistent with the scientific method, which has been proven to be effective in generating knowledge that is reliable, testable, and verifiable. Moreover, positivism promotes objectivity by relying on empirical evidence, positivism aims to reduce bias and subjectivity in the search for knowledge (Saunders et al. 2019). This is important because subjective biases can lead to inaccurate conclusions and hinder scientific progress. Positivism encourages the use of quantitative methods; positivists often use quantitative methods such as statistical analysis to test hypotheses and make predictions. This approach allows for precise measurement and analysis of data, which can lead to more accurate and reliable results (Saunders et al. 2019).

4.3 Research approach

Inductive and deductive techniques are two often utilised approaches in social research. The inductive method is commonly used by researchers who aim to create a theory based on the information gathered. To put it another way, such researchers are aiming to describe a social reality based on subjective perceptions and personal observations. The inductive method, according to Saunders et al. (2019), is an individual's style of evaluating social reality, along with the interpretations they assign to specific events.

Thus, the context in which specific occurrences take place will be taken into account in the inductive method, which may lead to the discovery of alternative cause-effect relationships. Qualitative approaches and small samples are frequently applied in the inductive approach. In this approach, as stated by Ghauri and Gronhaug (2005), data are the starting point for research, which is followed by observations, outcomes, and hypothesis building. As a result, the theory-generation process is reliant on the researchers' subjective assessments and personal beliefs.

In contrast, researchers who begin their study with a generalised theory and specific research questions use the deductive technique (Ghauri & Gronhaug, 2005). In deductive research, quantitative data are employed to explain causal links between variables. The researcher proposes a set of ideas or hypotheses in the first phase of the study, which are subsequently tested by empirical observation or experimentation (Park et al., 2020). Bryman (2015) suggests that the concept of a deductive approach must be operationalised, and large samples must be used to statistically generalise the results and to quantify the facts. Moreover, as mentioned earlier, deductive involves starting with a general principle or theory and deriving specific conclusions or predictions from it (Saunders et al. 2019). This approach provides a systematic and structured framework for reasoning, which can help to ensure that conclusions are sound and valid. Furthermore, the deductive approach is often associated with objectivity because it relies on logical inference rather than personal biases or opinions. Deductive can be an efficient way to test hypotheses or theories because it involves deriving specific predictions that can be tested through observation or experimentation (Park et al., 2020). This can help to focus research efforts and lead to more efficient use of resources.

Guided by the above discussion, the researcher will utilise a deductive technique within the positivist paradigm to test the hypothesis and determine the link between different variables in this study.

4.4 Research methods

4.4.1 Quantitative approach

The contrast between numeric data (numbers) and non-numeric data, according to Saunders et al. (2019), is one way to distinguish quantitative research from qualitative

research (words, images, audio recordings, video clips, and other similar material). In this context, the term `quantitative` refers to any technique of data collection (such as a questionnaire) or data analysis (such as graphs or statistics) that summarises a given data set. On the other hand, the term `qualitative` is often used as a synonym for any non-numerical data collection method (such as an interview) or data processing procedure (such as categorising data) (Saunders et al., 2019).

Quantitative research designs are commonly linked with the positivism approach, particularly in cases where it is associated with well organised and planned data. Walsh et al. (2015) and Park et al. (2020) argue that the positivism, deduction, and quantitative research methods are linked and largely seen as a philosophical caricature.

Quantitative research is typically connected to the deductive approach, which involves collecting and analysing data to evaluate ideas. Quantitative research also looks at the connections between variables that have been statistically evaluated and analysed using a variety of statistical and graphical methods. Such research usually includes controls, similar to an experimental design, to confirm the data's validity. Because data is collected on a regular basis, questions must be phrased properly so that the targeted population understands these questionnaires (Saunders et al., 2019). To achieve generalisability, this methodology usually employs probability sampling techniques. The researcher is also separated from the people being studied, who are known as respondents.

Interpretative philosophy, on the other hand, is frequently associated with qualitative research (Denzin & Lincoln, 2018). In interpretative research, researchers attempt to make sense of people's subjective and socially constructed impressions of the subjects under investigation. Naturalistic research is named due to the fact that it requires researchers to work in a natural environment (or study context) in order to develop trust,

engagement, gain access to meanings, and achieve in-depth comprehension. Qualitative research may be done using a realism or pragmatist philosophy, much like quantitative research (Saunders et al., 2019).

A naturalistic and emergent research approach is used in many types of qualitative research to establish a theory or construct a deeper theoretical viewpoint beyond what is already available in the literature. Furthermore, some qualitative research methods begin with a deductive approach, in which qualitative procedures are used to evaluate an existing notion (Yin, 2018).

To develop a conceptual framework and discuss theoretical contributions, qualitative research analyses participants' meanings and interactions by utilising a variety of data gathering procedures and analytical tools. A qualitative researcher's efficacy is determined not only by gaining physical access to participants, but also by establishing rapport and displaying sensitivity in order to acquire cognitive access to their data (Saunders et al., 2019). As a result, participants in qualitative research are more than just respondents; they are active participants in the data gathering process. Meaning is formed from words and visuals rather than statistics in qualitative research. It is common to be required to clarify and discuss words and imagery with participants because such signs may have a number of meanings and connotations with the collected data.

The conclusion of the above discussion guides the researcher in adopting a quantitative approach to this study, given that quantitative research is known to be more reliable and objective, whereby statistics can help generalising the findings. Moreover, quantitative research often reduces and restructures a complex problem to a limited number of variables. Quantitative research also looks at relationships between variables. Thus, such

research can establish cause and effect in highly controlled circumstances, while also testing theories or hypotheses.

The current study aims to investigate the relationship between transformational leadership and innovation within the Jordanian banking sector. The research question that this study addresses is: ***What is the impact of transformational leadership on product and process innovation by integrating the roles of knowledge sharing and interpersonal trust as mediators?***

4.5 Research Sample

4.5.1 Sampling design

The present research targets the Jordanian banking sector; thirteen registered banks operating in the Irbid governorate in Jordan were therefore targeted. Considering each bank is different in terms of number of staff, the targeted population comprises components of different sizes. Therefore, stratified sampling was used to determine the required sample from each bank to ensure that all banks are statistically represented in the sample.

For the purposes of stratified sampling, the total population size from all 13 banks is 824. Using the required sample size list by Sekaran and Bougie (2016) at Confidence 95% and Margin of error (5.0%), required sample for population size 824 to be 262. The sample size of 262, hence calculated, ensures that the participants are an accurate representation of the targeted population.

The formula to calculate the percentage for the required sample from each bank is: $(262/824) * 100 = 31.79\%$, thus making the required sample proportion from each bank 31.79%. Next, Table 4.1, lists a summary for targeted banks, along with their staff size and required

sample. Following a sample design using in the stratified sampling approach, a simple random sampling method was applied to distribute questionnaires.

Table 4.1 List of targeted banks and their staff size and required sample.

	Bank Name	Number of employees	Required sample
1	Jordan Ahli Bank	37	12
2	Bank Al-Etihad	35	11
3	Capital bank	17	6
4	Arab Bank	46	15
5	Jordan Kuwait Bank	46	15
6	Jordan Commercial Bank	25	8
7	Al-Rajhi Bank	30	10
8	Islamic International Arab Bank	41	13
9	Safwa Islamic Bank	38	12
10	Jordan Islamic Bank	151	48
11	Bank of Jordan	72	22
12	Cairo Amman Bank	108	35
13	Housing Bank	178	55
Total		824	262

4.5.2 Targeted population and brief about banking sector at Jordan

There are 25 registered banks in Jordan that include the foreign and the Jordanian banks. However, the researcher only investigated the 13 registered banks in Amman stock exchange to answer the research question and to fill the research gap. In Jordan, the banking industry is confronted with continuously changing issues that necessitate

innovation, and it plays a critical role in sustaining the economy and its growth (AlAbedallat, 2017). The banking sector has been designated as one of the major pillars that drive the country's economy and contribute to stability and growth (Al-Fayoumi & Abuzayed, 2009).

Financial and social stability accomplishments in Jordan have been driven forwards by the banking industry (Association of Banks in Jordan, 2007). Jordanian banks are generally considered to be lacking innovation, despite current developments (Salaymeh, 2013). However, the banking industry worldwide, in general, is regarded as being a significant participant in high-quality innovation (Sufian & Al-Janini, 2017). When the knowledge initiative was introduced in 1996, it enhanced several elements of the bank's function, allowing for more efficient improvement and for promoting change inside and outside of the banking environment (Gwin, 2003).

This study targets all registered banks in the Irbid governorate, although usually most studies target the capital Amman. The Irbid governorate was favoured as the researcher is familiar with this context. Usually, administrative practices and performance levels applied in the central branches in the capital Amman differ from practices and performance levels in the branches of governorates. Therefore, the study aims to offer a realistic assessment that identifies weaknesses and strengths and realistically evaluates leadership practices. The study targeted the Irbid governorate, which is the second-largest governorate after the capital in the country. Moreover, it is a representative sample, as all the registered banks have branches in the targeted area (Irbid). This study subsequently aims to provide practical implications for managers and leaders in the banking sector, and further provide theoretical implications to the transformational leadership literature body.

4.6 Questionnaire Survey

A survey tactic is usually combined with a deductive research technique. It is a frequently deployed strategy for answering questions like “what,” “who,” “where,” “how much,” and “how many” in business and management research (Saunders et al., 2019). Thus, it tends to be used within exploratory and descriptive research. Moreover, it supports researchers in collecting large amounts of data from a significant population via the questionnaire technique (Sanders et al., 2019).

Additionally, the survey approach, according to Saunders et al. (2019), is perceived as authoritative by the public and is relatively straightforward to explain and understand. Researchers use the survey method to collect data and use descriptive and inferential statistics to analyse it quantitatively. Moreover, Saunders et al. (2019) argue that survey data may be utilised to find reasonable explanations for specific relationships between variables and to construct models of these interactions. Using a survey questionnaire allows research to have more control over the study process (Saunders et al., 2019).

Gray (2009) distinguished between two types of surveys (descriptive and analytical). A descriptive survey would be used to assess a group's characteristics across time in order for researchers to find variability in a variety of events. On the other hand, an analytical survey is a way of putting a hypothesis to the test and seeing the relationship between independent and dependent variables (Gray, 2009).

Additionally, choosing the appropriate type of questionnaire in a study depends on many different factors that are related to the study's objectives and questions (Saunders et al., 2009). The characteristics of the respondents, the expected sample size and the forms and number of questions needed to collect data are examples of these factors. In addition, scholars such as Blumberg et al. (2014) differentiate between other types of

questionnaires (self-administrated questionnaires and interviewer-administered questionnaires).

A self-administered questionnaire is completed by the respondent themselves. There are three types of self-administered questionnaires: delivery and collection, postal questionnaire, and online questionnaire. The delivery and collection version are used when the researcher hands the questionnaire to the respondent and collects it after it is completed (Blumberg et al., 2014). A postal questionnaire is used when the researcher posts the survey to the targeted respondent. And finally, an online survey is used when the researcher uses online tools to prepare the questionnaire and distribute to a wider range (Saunders et al., 2019).

The second type of questionnaire is the interviewer-administered questionnaire. In this type of questionnaire, the researcher records responses using one of the following two approaches. First, in a telephone questionnaire, the researcher makes a phone call and completes the questionnaire based on the respondent's answers. The second approach involves the researcher meeting the respondents and directly asking questions. (Saunders et al., 2019).

Following the above discussion, a self-administered survey was chosen to collect data from the respondents. The researcher has chosen this type as it is the most suitable and fastest way of collecting data in Jordan. Moreover, it was chosen to ensure a high responses rate. The researcher handed the questionnaire to respondents and explained the aim and the purposes of this study, in order to encourage the respondents to participate.

4.6.1 Questionnaire design and measures

It was critical to create an appropriate research instrument to answer the research question. As a result, a suitable questionnaire was created to reflect the study's principal goal and purpose. A questionnaire is a series of questions used to quantitatively measure the perceptions of respondents. The primary purpose of the questionnaire is to translate the researcher's information needs into a set of questions that respondents are ready and able to answer (Malhotra, 2001). The questionnaire goes through several stages of development (Iacobucci & Churchill, 2009). Forming the key components of the research project, such as the research topic, research questions, objectives, and hypothesis, comes first in the research process. These particular elements help keep the questionnaire design focused. Understanding the precise components associated with transformational leadership and innovation, as well as the mediating elements, are critical stages in constructing the specific questionnaire in this regard. As a result, the key source of comprehending these components was a continuous reading of relevant literature and an awareness of the nature of current academic procedures.

The next stage in creating the present questionnaire was to write a collection of statements that would be straightforward for responders to understand. The statements were then organised and classified into distinct sections based on the study's objectives. Consequently, respondents were asked to choose the categories that best characterise their thoughts on various statements using a five-point Likert (1932) rating scale. Previous researchers suggested that this response scale is one of the more fundamental scales that is used, hence why it was chosen (Lopez et al., 2008). The last phase in the present study's questionnaire design comprised analysing and reconsidering whether statements in various parts reflected the study's goal of researching transformational leadership and innovation views.

The current study aims to measure TL using Multifactor Leadership Questionnaire 5X (MLQ) as suggested by Avolio et al. (1999). This scale includes the items of four behavioural components that were mentioned earlier. Regarding the KS, a scale that was developed by Rosendaal and Bijlsma-Frankema (2015) will be used. Regarding IT, a scale that was developed by Cook and Wall (1980) will be adapted. To measure the primary constructs of the study (product and process innovation) a pre-validated tool will be used from the extant literature. As shown in the table (4.2) below taken from a research study (Easa, 2012) showing questions that will be used as a developing scale to measure product and process innovation.

Table 4.2 product and process innovation scale.

Product innovation	Process innovation
Designing concepts that could assist team members in fulfilling their responsibilities.	Major changes to the workplace and organisational structure.
Developing current offerings in accordance with consumer demands and market tendencies.	Adopting responsive management techniques to handle unforeseen change.
Applying new technologies to expand and enhance offered services.	Implementing major changes to business procedures and operations.
Utilising unconventional approaches to problem-solving.	Employing distinct process management techniques in contrast to those used by competitors.
Producing services to better align with the customers' needs.	Utilising creative marketing techniques for pricing, services, and promotions.

20 questionnaires as pre-test were undertaken to ensure that the development was clear and reliable (Iacobucci & Churchill, 2009). The researcher sent the questionnaires to a few field workers for review during pre-testing. A few suggestions for changes and comments were made by the reviewers, which were taken into consideration.

4.6.2 Questionnaire development

The questionnaire that the researcher created as the data-gathering tool comprised five sections, in addition to the cover letter. The first section was mostly focused on acquiring demographic information (Bank employed by, gender, marital status, education level, position, salary, and experience). Section two was focused on the innovation part, while section three gathered data on transformational leadership. The fourth section was concerned with interpersonal trust, and finally, the last section focused on knowledge sharing. Furthermore, each dimension is measured by a particular number of statements. The statements from 1-12 measure innovation, whereas 13-31 measure transformational leadership, 32-43 measure interpersonal trust, and finally 44-51 measure knowledge sharing.

4.6.3 Content validity (Face validity)

Since the questionnaire adopted measurement items used in the existing literature, this entails that face validity was validated in prior studies that used these scales. Further, three specialists in the academic field of management at Yarmouk University confirmed the questionnaire's face and content validity. The instrument proved to be well-designed, requiring only simple adjustments to reliably measure the study dimensions at all levels without error or bias. In Table no 4.2, the number of experts who completed questionnaire validation is displayed. Their suggestions were taken into account, and the questionnaire was revised before being distributed to the study's sample.

Table 4.3 List of Arbitrators

Name	Post	Department	University
Anis Khasawneh	Professor	Public administration	Yarmouk University
Ali Rawabdeh	Associate	Public administration	Yarmouk University
Raed Ababneh	Professor	Public administration	Yarmouk University

4.6.4 Questionnaire translation

The researcher must consider grammar, syntactic, lexical, idiomatic, and experiential difficulties while translating a questionnaire into a different language (Saunders et al., 2009). Four tactics can be applied, according to Usunier (1998). Firstly, the questionnaire is translated without the use of a third party in direct translation. Although this process is straightforward and inexpensive, it may result in major variations in meaning between the source and target questionnaires. Secondly, in reverse translation, the researcher has the source questionnaire translated into the desired language, then has it translated back into the original language by two independent translators. The researcher then compares the two new surveys in the original language to create the final version.

Thirdly, simultaneous translation entails the translation of the original questionnaire into the target language by two or more independent translators. These two questionnaires are then compared to generate the final version. Finally, in the mixed technique, two or more independent translators undertake back translation, and two new original-language questionnaires are compared to create the final version in the chosen language.

Although the mixed approach has some advantages over back-translation, such as the ability to detect mistranslation, missing words, or incorrect interpretation, it is more expensive and requires more than two independent translators. As a result, in this study,

the back-translation approach was used, which is a system for translating an English questionnaire into Arabic and back to English. Several variances in meaning were noticed after comparing and discussing the two English-language surveys with the two translators, and the Arabic version was adjusted with their collaboration.

4.6.5 Pilot study

After translating the questionnaire, a pilot study was conducted to validate instrument reliability. A sample comprising 30 participants from the targeted population (excluded from the sample) were contacted and required to fill the questionnaire and return it. Cronbach alpha was gathered, where = all values were above the threshold of (0.70) showing acceptable statistical reliability for the instrument. Further correlations between each statement and its dimensions were gathered to validate internal consistency for scales. All correlations were found significant at (0.001) and positive exceeding (0.40) level supporting internal consistency of the instrument, accordingly, the instrument was thus seen as suitable to conduct the study.

In the present research, the unit of analysis is the branch employees, which includes the following:

- 1- Manager
- 2- Assistant manager
- 3- Supervisor
- 4- Employee

4.7 Ethical Consideration

Before reaching out to the participants to collect data for the research and start field work, it was essential to seek ethics approval from the University of Huddersfield Ethics committee. To gain this approval, certain details have to be provided to the committee in a standard format. The submitted ethics approval form is attached in appendix (see appendix 7). Any concern raised by the ethics approval committee were addressed. Only after meeting all the essential ethics criteria set by the university, the ethics approval was granted to reach out to the participants and carry out the data collection (Saunders et al., 2009).

Since the original questionnaire was designed in English, whereas the data was collected in Jordan where functional language is Arabic. Hence, it was paramount to translate the questionnaire in Arabic while ensuring that the essence of the questions is not lost in translation. To ensure the validity of the questionnaire is maintained the translated questionnaire was discussed with experienced academics in Yarmouk University. This discussion resulted in confirming the face validity of the questionnaire in Arabic language. Hence, it was confirmed that the questionnaire did not lose its essence in the translation process (Saunders et al., 2019; Bell et al., 2022).

Various codes of ethics and principles such as maintaining the confidentiality of data, defending human rights, respecting the dignity of study participants, ensuring privacy and anonymity, and seeking informed consent are some of the ethical principles that need to be met for research to be rigorous and effective (Bell et al., 2022). Following strict ethical considerations in primary research is a step-by-step process, where each step feeds into the next one in meeting the ethical standards while collecting the data and further steps. The first milestone in the process is to seek informed consent of the participants and

ensuring that their participation is voluntary (Saunders et al., 2019). Gaining informed consent from the participants implies that participants know all the information about the project that they want to know, and all their doubts have been cleared regarding the information that they may reveal while responding to the research questionnaire/ survey (Bell et al., 2022). Whereas voluntary participation implies that the participants have agreed to take part in the study without any persuasion, compulsion, or coercion (Maylor et al., 2017). Following this process ensures that the researcher has extended appropriate rights to the research participants for their autonomous and voluntary participation in the research without any external pressure or incentives. In this research, the researcher maintained the contact with the public administration of each potential participating bank to seek their consent about participation. In some cases, the consent was given immediately after asking few minor questions whereas in other cases the researcher submitted the questionnaire to the potential participating bank for review. The consent for participation was given after a few days when the concerned bank was reassured about the questionnaire and all the information that was sought out. While requesting informed consent and voluntary participation, the potential participants were also informed about their right to withdraw (Macfarlane, 2010). The right to withdraw implies that the participants had right to withdraw from the participation at any point of time or decline to answer any questions they were not comfortable about answering.

The next ethical measure in the collecting data is protecting participant's personal identity such as their names, employing organisation, designation and neither of these is linked with their individual responses to the questionnaire (Bell et al., 2022). Similarly, maintaining confidentiality of the data implies that any data / information shared by the participants is not accessed by or shared to any unauthorised individual. Ensuring

anonymity and confidentiality develops trust with the participants and they feel free to share information and other relevant details that add value to the research (Maylor et al., 2017; Saunders et al., 2019; Bell et al., 2022). In this study, the researcher retained the anonymity of the participants by using pseudonyms whereas the confidentiality was ensured by means of storing the collected data in a password protected personal laptop. Since the data collected in paper form of questionnaire, the researcher transferred the responses from the paper forms to the personal laptop manually and all the paper questionnaires were stored safely with the researcher in a safe and no one else other than researcher has access to it.

4.8 Data analysis methods

The statistical analysis began with coding data on a PC using the Statistical Package for the Social Sciences (SPSS) v. (26). This package was also used to complete data screening and establish preliminary analysis requirements. Following this, an Exploratory Factor Analysis (EFA) was conducted to examine the underlying structural components of the observed data. Next, SEM-AMOS v. (23) was applied to test the SEM. Structural Equation Modelling is one of the most robust analysis approaches, which is preferred for theory development and testing in many disciplines of social sciences (Lei & Wu, 2007; Hair et al., 2019). Further, SEM has superior power in assessing multi-level models simultaneously (Shook et al., 2004), making it superior in comparison to multiple linear regression. AMOS v.23 package is covariance-based [CB-SEM]; this approach employs a maximum likelihood estimation method that minimises differences between the estimated covariance matrix and the observed one, while also maintaining explained variance as is (Hair et al., 2019). This makes CB-SEM suitable for theory testing

purposes, since this technique is useful in evaluating the quality of model fit. Moreover, this justifies the use of AMOS v.23 in this study. Many researchers have employed SEM-AMOS v.23 in similar studies (Al-Husseini et al., 2019).

To conduct the SEM analysis, two steps were completed under the guidelines of Anderson and Gerbing (1988). In step 1, the measurement model was evaluated based on goodness of fit, validity, and reliability of the scales. In step 2, the structural model was examined to gather path estimates. The measurement model was examined using Confirmatory Factor Analysis (CFA), which aims to examine whether the hypothesized model is supported by observed data. Meanwhile, the structural model was implemented by applying path analysis to examine achieved variance, path coefficients, and its significance levels (Hair et al., 2019). The analysis made use of a set of tests and tools, as follows:

- Standard deviation for Likert scale responses to identify unengaged responses.
- Median of nearby series to replace missing data.
- Cook's distance plotted using Simple scatter do-diagram to identify outliers.
- Kurtosis and skewness to check for normal distribution.
- Variance Inflation Factor (VIF), Tolerance and Pearson correlations to check for multicollinearity issue.
- Harman's single factor test to check for bias issue.
- Descriptive analysis including counts and percentages for respondents' characteristics, mean and standard deviation (std.) to determine assessments levels.
- Pie chart and bar chart to visualise counts.
- Exploratory Factor Analysis (EFA) to examine structure factors for observed data.
- Confirmatory Factor Analysis (CFA) to validate the measurement model.
- Cronbach α and Composite Reliability [CR] to test statistical reliability.

- Average Variance Extracted (AVE) to test convergent validity.
- Fornell-Larcker approach to test discriminant validity.
- Path analysis to test structural model.
- Bootstrapping to test the significance of indirect effect.

4.9 Summary

In this chapter, the research methodology was discussed to reach the study goals. The research philosophy, research approach. Moreover, this study adopted the quantitative method approach. The deductive approach was used to answer the research questions. Moreover, this chapter also discussed the sampling design, the targeted population, questionnaire survey and questionnaire design and measures. Furthermore, the content validity (face validity) was confirmed by three specialists in the academic field. questionnaire translation was discussed in this chapter as the researcher distributed the questionnaire using different language. Moreover, self-administrative questionnaire was used to collect data from the banking sector employees. Also, this questionnaire was used to test the casual relationship in the hypothesised model. Additionally, before reaching out to the participants to collect data for the research and start field work, it was essential to seek ethics approval from the University of Huddersfield Ethics committee. To gain this approval, certain details have to be provided to the committee in a standard format. Finally, this chapter discussed EFA to examine the underlying structural components of the observed data.

Chapter 5: Data analysis and descriptive results

5.1 Introduction

The aim of this study is to investigate the effect of TL on innovation by integrating knowledge sharing and interpersonal trust as mediators. The quantitative approach therefore guided this study to collect respondents' perceptions using a self-administered questionnaire anchored to a five-point Likert scale. Gathered responses were coded on a PC using SPSS v.26 and the data were deemed suitable for analysis. In this chapter, the data analysis and descriptive analysis results are discussed. The chapter begins by providing a survey response analysis, followed by data screening, then the demographic results are presented, ending in an exploratory factor analysis.

5.2 Survey responses analysis

The required sample size was designed by adopting stratified sampling, as explained in the methodology and design chapter. However, to collect responses from targeted respondents, the researcher adopted a probability simple random sampling method to survey employees at each bank. This sampling strategy enables the selection of respondents at random from each bank while retaining the same probability that all employees will be included in the sample (Sekaran & Bougie, 2019).

The researcher formally contacted each bank's public relations department to obtain permission to distribute the questionnaire. Then, using paper questionnaires, the researcher collected responses from respondents from each bank. Thus, questionnaires were handed out during official working hours to employees' offices. Each respondent was informed that participation in the study is voluntary, and that responses will be used for scientific purposes only.

Additionally, respondents were informed that the results will be presented in an aggregate manner to ensure that they do not bias any assessments. Regarding specific assessments related to their leader practices, they were also informed that there were no wrong or right answerers. They were advised that their assessments should reflect current practises and performance levels at their banks. The questionnaires were handed to employees, and the researcher gave them sufficient time to fill them out and return them to the secretary's office. Data collection started from 19/9/2021 and was completed on 29/10/2021.

The researcher chose a larger sample size at each bank (Table 5.1 Summary of survey responses analysis.), which exceeded the required minimum sample size to avoid sample reduction during the data screening phase. Moreover, as this study makes use of Confirmatory Factor Analysis, the sample size should satisfy the requirements of CFA as the goodness of fit indices in SEM-AMOS v.23 are sensitive to sample size. Therefore, it is recommended that each parameter in the instrument have a minimum of 10 observations [ratio is 10:1 parameter] in line with Bentler and Chou's (1987) suggestions. The instrument has 51 Likert-based parameters and, accordingly, requires a sample of a minimum of $51 \times 10 = 510$ observations.

In total, 627 questionnaires were distributed, of which 588 were filled out and returned, resulting in a response ratio of 93.77%. The response ratio was very high. This reflects the efforts made by the researcher to collect data, as the researcher made many visits and sent many reminders to surveyed respondents to retrieve questionnaires. Table 5.1 provides a summary of survey responses analysis of this study.

Table 5.1 Summary of survey responses analysis.

	Bank Name	No. of employees	Required sample	Distributed questionnaires	Retrieved questionnaires	Responding ratio
1	Jordan Ahli Bank	37	12	37	37	100%
2	Bank Al-Etihad	35	11	35	35	100%
3	Capital bank	17	6	17	17	100%
4	Arab Bank	46	15	46	46	100%
5	Jordan Kuwait Bank	46	15	44	42	95.45%
6	Jordan Commercial Bank	25	8	25	25	100%
7	Al-Rajhi Bank	30	10	25	21	84%
8	Islamic International Arab Bank	41	13	38	32	84.21%
9	Safwa Islamic Bank	38	12	35	33	94.28%
10	Jordan Islamic Bank	151	48	81	67	82.71%
11	Bank of Jordan	72	22	68	66	97.05%
12	Cairo Amman Bank	108	35	86	80	93.02%
13	Housing Bank	178	55	90	87	96.66%
Total		824	262	627	588	93.77%

5.3 Data screening and preliminary analysis

To validate data suitability for subsequent analysis, data screening along with a preliminary analysis were established. This section presents the results for processing: missing data, unengaged responses, outliers, and checking for issues related to normality, multicollinearity, and bias.

5.3.1 Missing data:

Missing data is a common problem in questionnaire research (Little & Rubin, 2019). No questionnaires were found to have a whole construct scale missing in this study. However, missing values were found in a few items [Likert-based items]. Therefore, dropping a whole questionnaire due to missing data was not seen as necessary. The ratio of missing data for the entire dataset was (0.1009%) below the maximum allowed level of 10% (Cohen et al., 2003). Therefore, missing data was not seen to distort the dataset. Instead, missing data was replaced by the median value of nearby series of points wherever it was required.

5.3.2 Unengaged responses:

Unengaged responses are common in survey-based research that uses a self-administered structured survey (Patten, 2017). From the perspective of standard deviation for Likert-based items, an std. value equal to zero signifies that the respondent answered all items in the questionnaire with the same answer, either 3,3,3,3 or 4,4,4,4 or 1,1,1,1, whereas an std. value below threshold (0.50) signifies a possible pattern in assessments, such as (4,4,4,5,4,4,4,5, etc.).

However, std. values were gathered for each questionnaire. Of these, 22 questionnaires scored std. values equal to zero. Therefore, 22 questionnaires were dropped from the

sample, and 146 questionnaires scored std. values below (0.50) showing an evident pattern in assessments. A total of 420 questionnaires were found to be valid for statistical analysis. Reverse statements IT12 and KS4 were reverse coded.

5.3.3 Outliers:

To identify outliers in the dataset, Cook's distance for regression models was gathered. However, Weinberg and Abramowitz (2008) note that when the Cook's distance is more than the threshold of (0.1), it is clear that the observation has a greater impact on the regression line's slope than other points in the dataset. Therefore, Cook's distance was gathered for six regression models Figure 5.1-5.7 examining the influence of TL on Product, TL on Process, IT on Product, IT on Process, KS on Product, and KS on Process. Two observations scored Cook's distance above the threshold of (0.1), which were dropped from the sample. The clear dataset that was deemed for further analysis comprised 418 valid responses; these are displayed in Table 5.2. The below Figures (5.1-5.6) illustrate Cook's distance for examined regression models using a simple-scatter dot diagram.

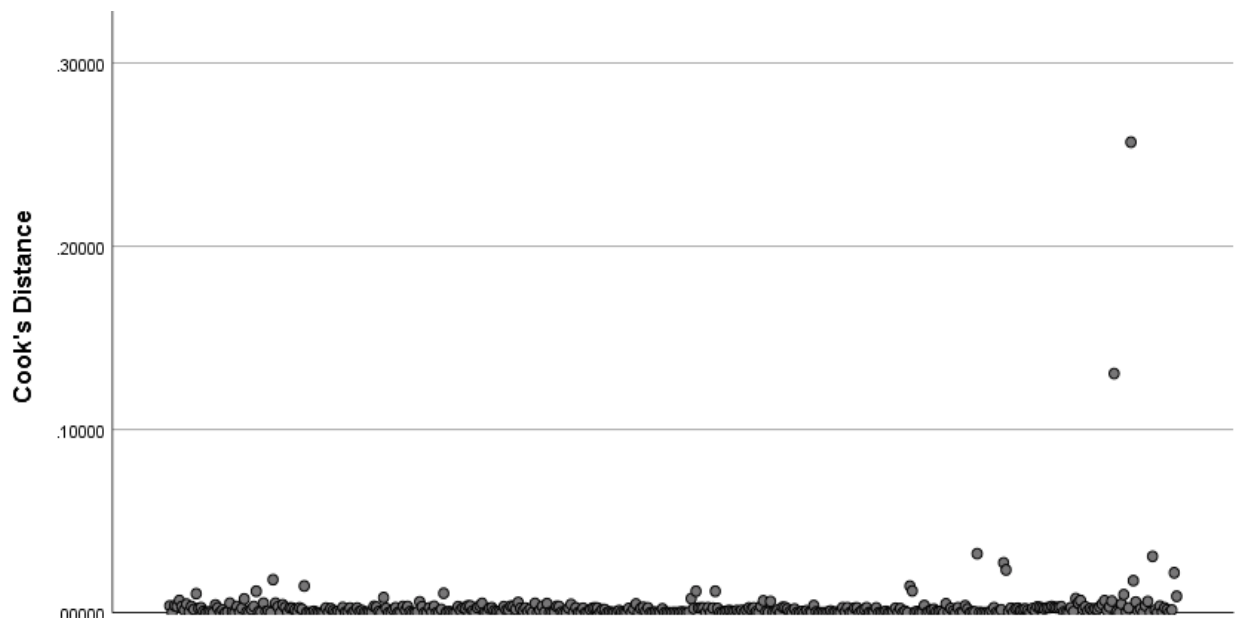


Figure 5.1 Cook's distance for regression equation: TL on Product.

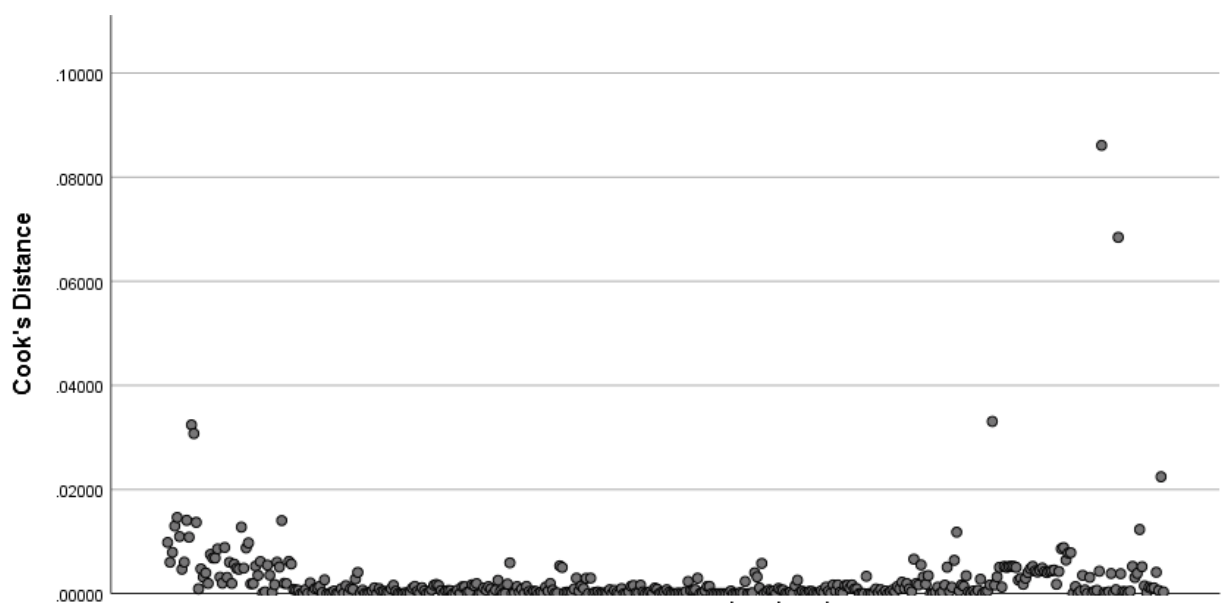


Figure 5.2 Cook's distance for regression equation: TL on Process.

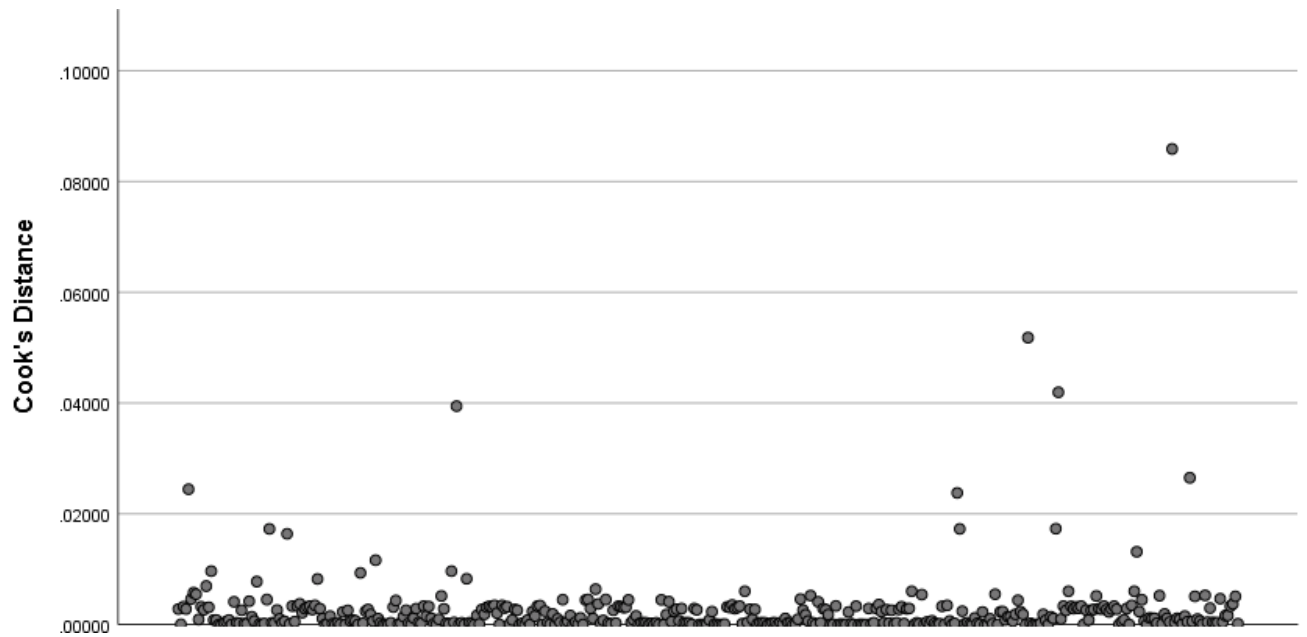


Figure 5.3 Cook's distance for regression equation: IT on Product.

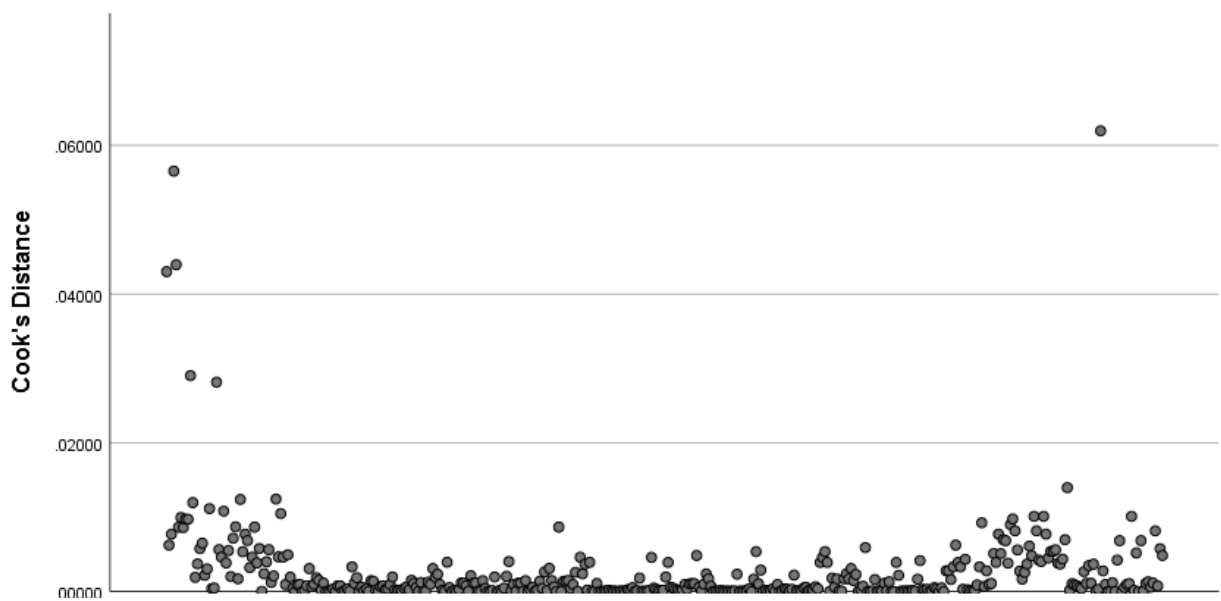


Figure 5.4 Cook's distance for regression equation: IT on Process.

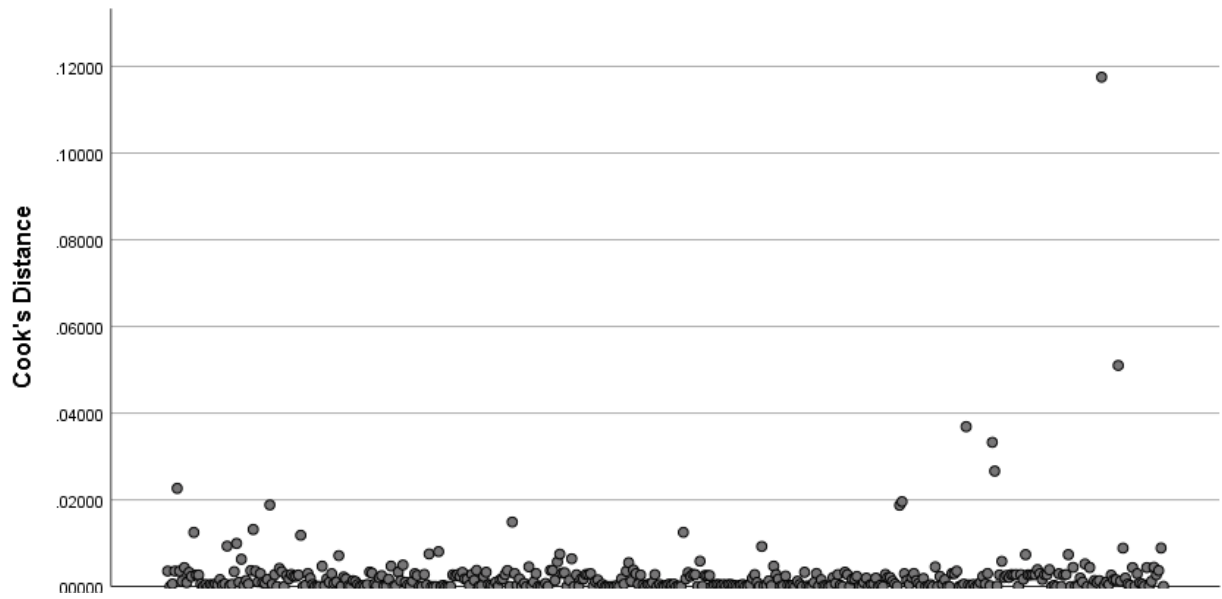


Figure 5.5 Cook's distance for regression equation: KS on Product.

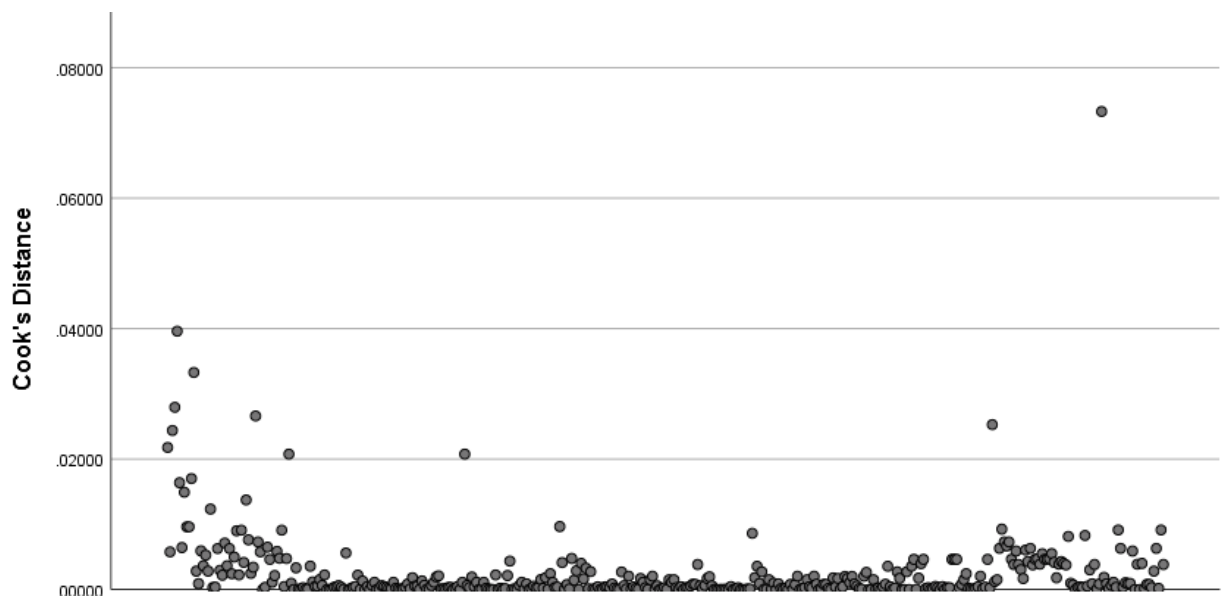


Figure 5.6 Cook's distance for regression equation: KS on Process.

Table 5.2 Summary of data screening.

	Bank Name	Retrieved questionnaires	Excluded due to pattern	Excluded due to outlier	Valid	% of sample
1	Jordan Ahli Bank	37	10	-	27	6.5%
2	Bank Al-Etihad	35	5	-	30	7.2%
3	Capital bank	17	0	-	17	4.1%
4	Arab Bank	46	5	-	41	9.8%
5	Jordan Kuwait Bank	42	6	-	36	8.6%
6	Jordan Commercial Bank	25	9	-	16	3.8%
7	Al-Rajhi Bank	21	5	-	16	3.8%
8	Islamic International Arab Bank	32	17	-	15	3.6%
9	Safwa Islamic Bank	33	7	-	26	6.2%
10	Jordan Islamic Bank	67	32	-	35	8.4%
11	Bank of Jordan	66	21	-	45	10.8%
12	Cairo Amman Bank	80	22	1	57	13.6%
13	Housing Bank	87	29	1	57	13.6%
Total		588	168	2	418	100.0%

5.3.4 Data normality:

A normal distribution is one of the vital assumptions behind employing SEM-AMOS v.23, which is a parametric analysis approach. Normality examines the extent to which data is modelled well by a normal distribution. For this purpose, the Kolmogorov-Smirnov test and Shapiro-Wilk test were conducted. However, both tests were not significant for the majority of factors as P values were below (0.05), indicating that the data is not normally distributed, which is commonly the case in survey research (Pallant, 2020). However, as the sample size is greater than 30, parametric tests are allowed according to the Central Limit theorem (Pallant, 2020). It is vital to ensure that data curves are free of extreme skewness or kurtosis issues.

Kurtosis and skewness are measurements of data symmetry. Skewness relates to central tendency measures within data, which includes mean, mode, and median. Skewness quantifies how asymmetrically skewed the data distribution is. i.e., skewed to the left or the right (Church et al., 2019). On the other hand, Sposito et al. (1983) explain that kurtosis as a measure of the distribution curve, whether it is peaked or flat. Table 5.3 presents the skewness and kurtosis values for the dataset.

Nonetheless, the dataset was found to be free of symmetry issues, because kurtosis and skewness values did not exceed the maximum allowed level (2.2), as recommended by Sposito et al. (1983). Accordingly, the dataset is free of normality issues. Skewness values were as follows: product (-0.275), process (-0.583), innovation (-0.232), TL (0.256), interpersonal trust (-0.290) and knowledge sharing (-0.277). On the other hand, kurtosis values scored: product (-0.191), process (0.496), innovation (0.052), TL (0.157), interpersonal trust (0.103), and knowledge sharing (-0.102).

Table 5.3 Results of normality tests (N = 418).

Factor	Kolmogorov		Shapiro-Wilk		Skewness	Kurtosis
	Smirnov					
	Statistic	Sig.	Statistic	Sig.		
Product	0.187	0.000	0.926	0.000	-0.275	-0.191
Process	0.140	0.000	0.950	0.000	-0.583	0.496
Innovation	0.119	0.000	0.973	0.000	-0.232	0.052
TL	0.034	0.200	0.994	0.081	0.256	0.157
Interpersonal trust	0.073	0.000	0.986	0.001	-0.290	0.103
Knowledge sharing	0.078	0.000	0.986	0.000	-0.277	-0.102

5.3.5 Multicollinearity:

Dimensions of the independent variable [TL] and mediator variables [interpersonal trust and knowledge sharing] are subject to multicollinearity issues. Multicollinearity occurs when an independent variable correlates at a high level with another independent variable(s), indicating that an independent variable can predict another independent variable (Pallant, 2020). Having high multicollinearity can result in an inflated amount of variation (R^2) in the model. Moreover, it can undermine the significance level of the independent variable. Therefore, it is vital to check that the model is free of high multicollinearity issues. To check the multicollinearity issue, three tests were deployed (Pallant, 2020):

- a. *Variance Inflation Factor (VIF)*: a measure of the amount of multiple linearities among a set of multiple regression variables. VIF values should be below (10), and it is

recommended that they should be below (5) to have regressors free of collinearity (Neter et al., 1996, Kline, 2015; Pallant, 2020).

- b. Tolerance:* a measure of the extent to which beta coefficients are affected by the presence of other predictive variables in the model. Tolerance values should be greater than (0.10) to avoid multicollinearity issues in the model (Pallant, 2020).
- c. Pearson correlation:* a measure of the correlation between variables in concern. Pearson correlation should be below ($r = 0.90$) to avoid having two variables highly correlated (Pallant, 2020).

The TL dimensions were then regressed against each other. The results are displayed in Table 5.4. Meanwhile, TL dimensions and mediators were regressed against each other, and the results of which are shown in Table 5.5. The results in both tables support that multicollinearity was not a serious issue in this study: all tolerance values were above (0.10) and VIF values were below (10). Furthermore, neither of the correlations were found to be greater than ($r = 0.90$). All correlations were positive and significant at the (0.01) level. The highest correlation was scored ($r = 0.566$). The gathered findings demonstrate that multicollinearity was not a serious issue.

Table 5.4 Multicollinearity check between TL dimensions (N = 418).

Variable	Tolerance	VIF	Pearson correlation			
			1	2	3	4
Idealized influence	0.580	1.725	1			
Inspirational motivation	0.787	1.271	0.461**	1		
Intellectual stimulation	0.679	1.472	0.566**	0.279**	1	
Individualized consideration	0.746	1.340	0.493**	0.321**	0.334**	1

** Correlation is significant at (0.01) level

Table 5.5 Multicollinearity check between TL dimensions and mediator variables (N = 418).

Variable	Tolerance	VIF	Pearson correlation					
			1	2	3	4	5	6
Idealized influence	0.510	1.961	1					
Inspirational motivation	0.775	1.291	0.461**	1				
Intellectual stimulation	0.654	1.529	0.566**	0.279**	1			
Individualized consideration	0.681	1.469	0.493**	0.321**	0.334**	1		
Interpersonal trust	0.753	1.327	0.384**	0.182**	0.363**	0.425**	1	
Knowledge sharing	0.625	1.600	0.488**	0.297**	0.552**	0.390**	0.548**	1

**** Correlation is significant at (0.01) level**

5.3.6 Bias check:

This research relies on self-reported measures that can be subject to mood states, social desirability, etc. Therefore, the design of the questionnaire was aligned with suggestions in earlier studies (Lindell & Whitney, 2001; Chang et al., 2010), with a view to mitigate the influence of possible bias. In addition, some questions were designed as a reverse score, and the questionnaire was kept short and simple.

Respondents were informed that they should keep their identities anonymous to guarantee that they provided us with honest assessments. Finally, Harman's single factor test was conducted to examine the amount of influence of the common method bias. In line with suggestions by Podsakoff et al. (2012), the single factor solution indicated a poor fit as the amount of variance scored (34.868%) was evidently below the threshold of 50%, indicating that bias was not a potential issue in this study.

5.4 Demographic results

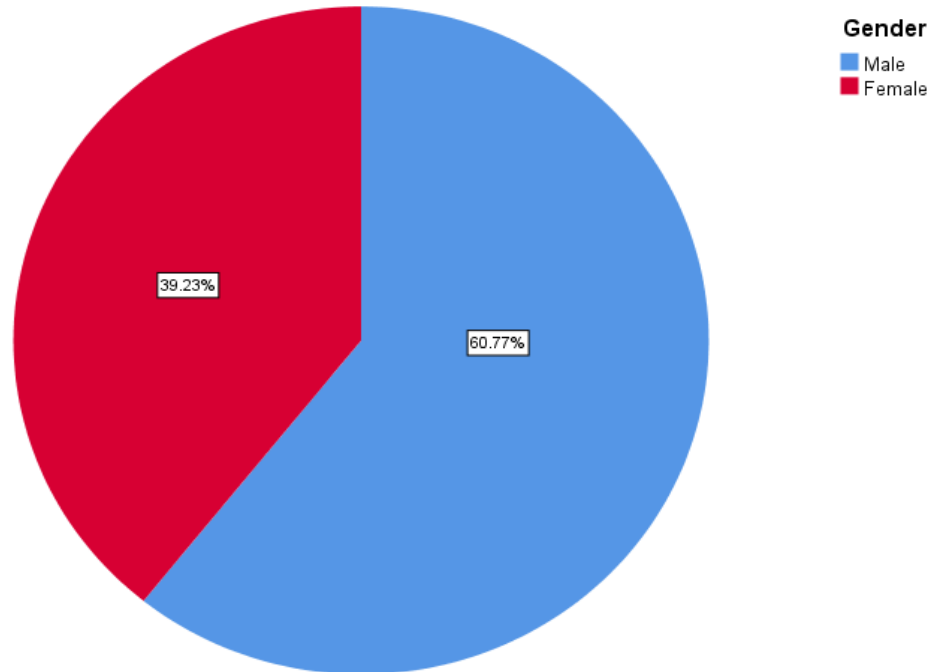


Figure 5.7 Sample gender pie chart.

Counts and percentages determined a demographic profile for our sample, as shown in Table (3.6). Of the total respondents, $n = 254$ [60.8%] were male and $n = 164$ [39.2%] were female, showing gender diversity in the Jordanian banking sector. These findings demonstrate acceptable involvement for women in Jordan's private sector, especially considering that Jordan is an Islamic country located in the Middle East and North Area [MENA]. This area, in general, has a cultural peculiarity toward women's work, and Jordan has significantly progressed towards accepting women in work. This is reflected by a report in the comprehensive statistical database [Annual Employment and unemployment Survey] of Jordanian women by the Jordanian department of statistics 2021 (Jordanian department of statistics, 2021). Figure (5.7) visualises the sample gender of the respondents.

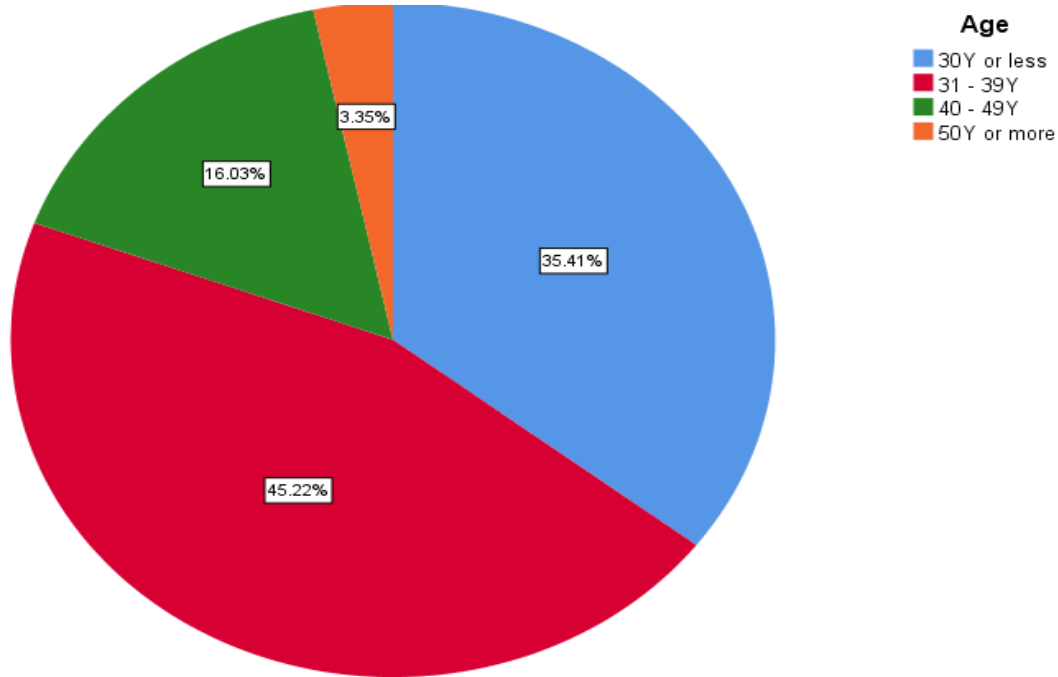


Figure 5.8 Sample age pie chart.

Concerning the age of participants, about half of the respondents were young, aged between 31 – 39 years; $n = 189$ [45.2%], and $n = 148$ [35.4%] of respondents came under the age category of 30 years or less. Meanwhile, older age categories scored low frequencies as $n = 67$ [16%] of respondents were aged between 40 – 49 years and $n = 14$ [3.3%] of respondents were aged 50 years or more. These findings are representative of the workforce in Jordan, as the majority of the workforce in the country are young. However, a critical indicator can be concluded concerning the low frequencies for older age categories. High turnover is characterised by the private sector in Jordan in general. Due to low salaries, employees tend to look for better jobs in other countries, specifically in the Gulf area, as they have a more satisfactory working experience (Al-Jaghoub & Westrup, 2003). Figure (5.8) visualises the sample age of the respondents.

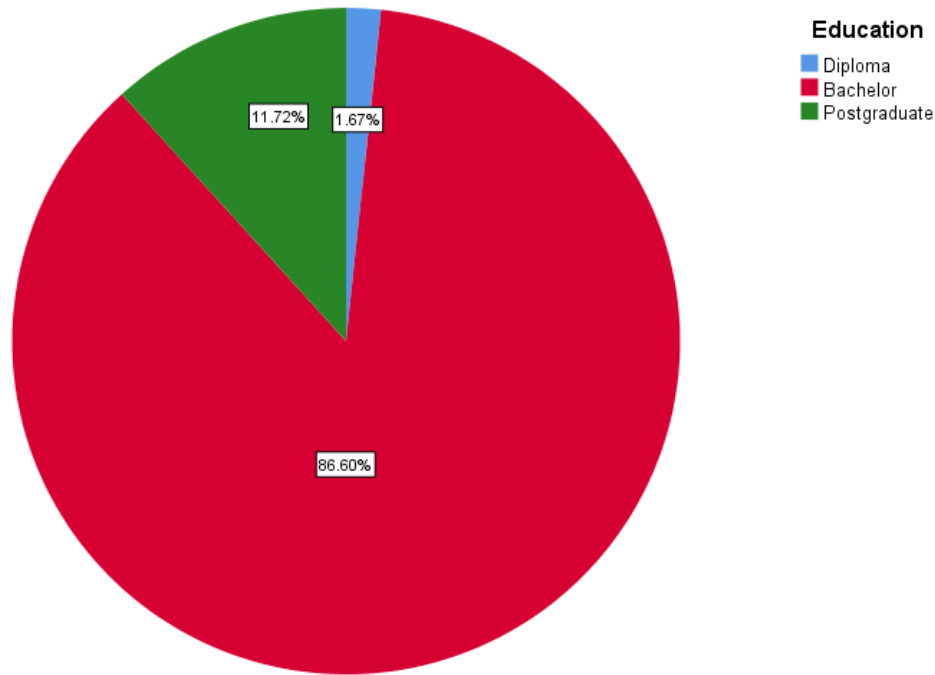


Figure 5.9 Sample education pie chart.

Regarding the education of respondents, a bachelor's degree was the most frequent certificate $n = 362$ [86.6%], whereas master's or Ph.D was the second most frequent certificate $n = 49$ [11.7%]. Indeed, diplomas scored the least frequency $n = 7$ [1.7%]. High education levels are also characterised by the Jordanian workforce. Jordan's workforce has the highest levels of education in the region, according to the report by the OECD entitled [Education at a glance, 2021]. Figure (5.9) visualises the sample education level of the respondents.

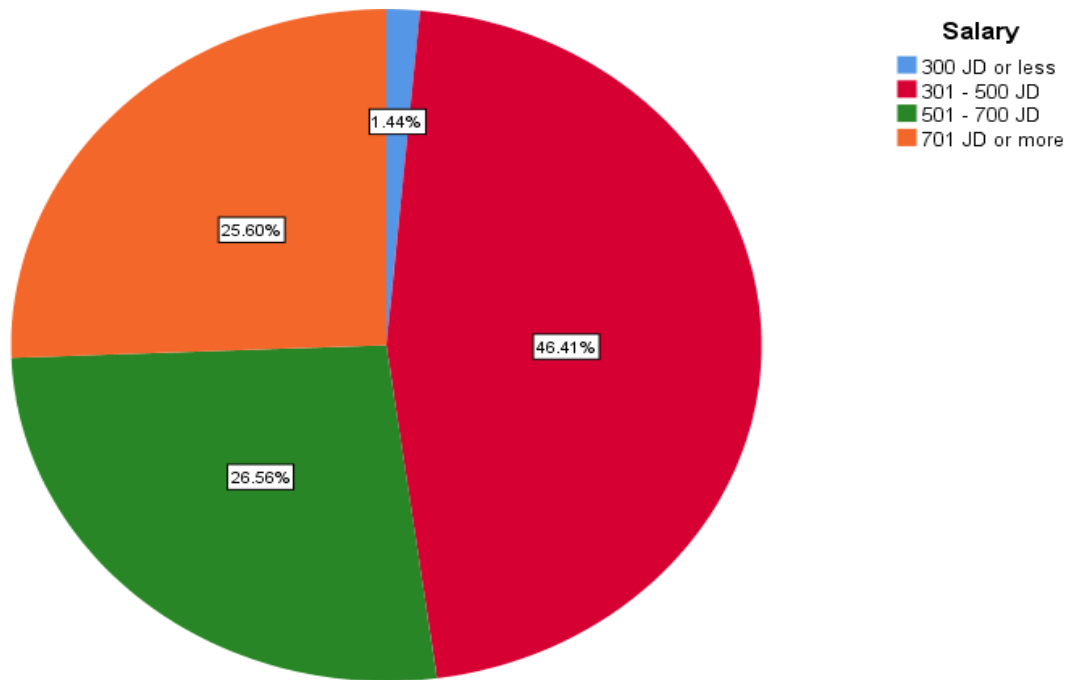


Figure 5.10 Sample salary pie chart.

For monthly salary, about half of the respondents $n= 194$ [46.4%] received a salary between 301 and 500 JD. This can be considered an average income for the employee level workforce in Jordan. Meanwhile, high salary levels are recorded for approximately a quarter percentage as follows: 501 – 700 JD $n= 111$ [26.6%] and 701 JD or more $n= 107$ [25.6%], low salary 300 JD or less recorded the least frequency $n= 6$ [1.4%]. Figure (5.10) present the income level of the respondents.

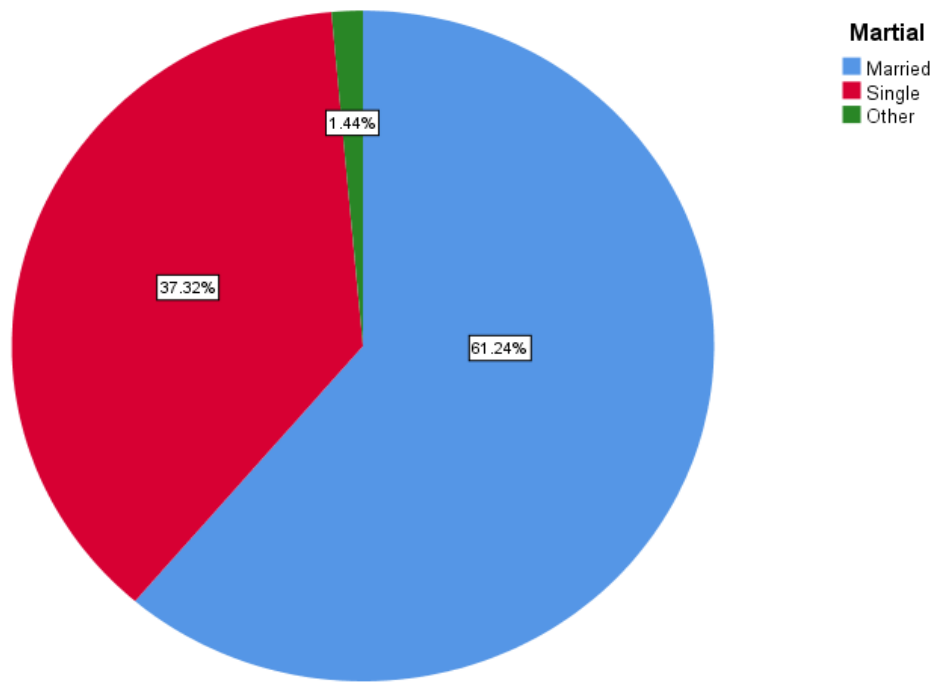


Figure 5.11 Sample marital status pie chart.

More than half of the respondents $n = 256$ [61.2%] were married, $n = 156$ [37.3%] of the respondents were single, and $n = 6$ [1.4%] of respondents reported other marital status. Figure (5.11) visualises the sample of marital status of the respondents.

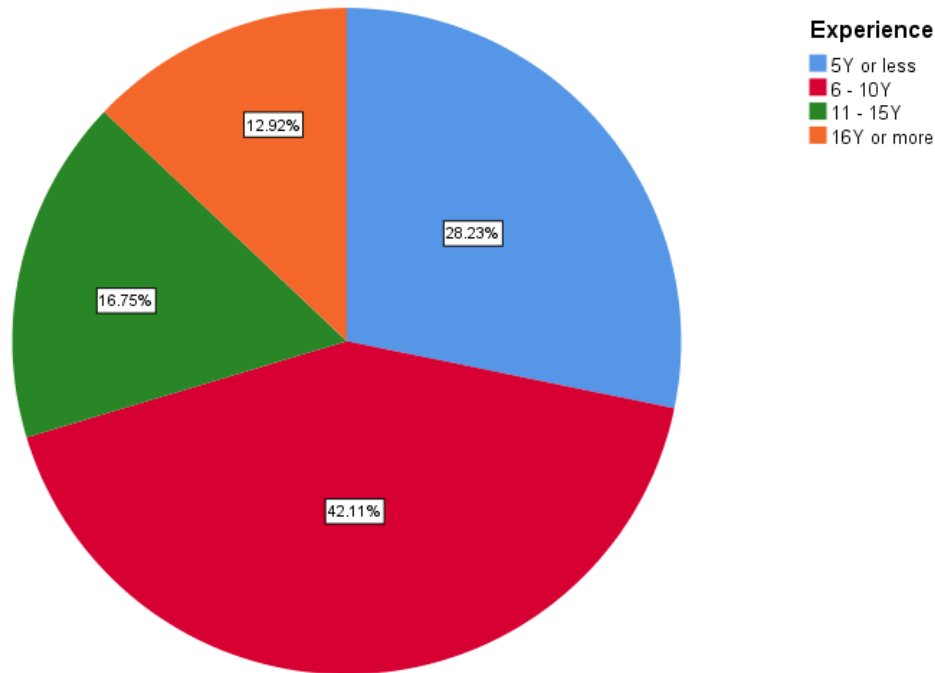


Figure 5.12 Sample experiences pie chart.

Regarding work experience, about half of the respondents $n = 176$ [42.1%] had between 6–10 years of experience. The higher experience category frequencies were as follows: 11–15 years of experience $n = 70$ [16.7%] and 16 years or more of experience $n = 54$ [12.9%]. Respondents with limited experience scored frequencies of $n = 118$ [28.2%]. The results demonstrate that there were moderate levels of experience for the respondents, which is in line with respondents' age categories, as most of the respondents were young. Figure (5.12) visualises sample work experiences of the respondents.

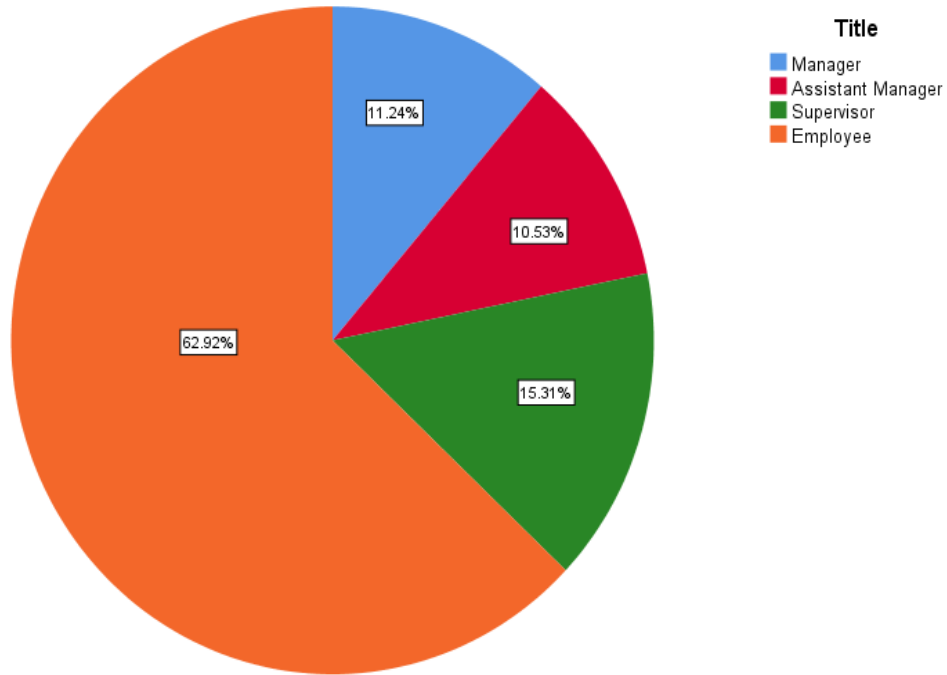


Figure 5.13 Sample titles pie chart.

Finally, the sample comprised respondents of different titles, with the majority being employees, demonstrating diversity in the sample. Frequencies for titles were as follows: manager $n= 47$ [11.2%], assistant manager $n= 44$ [10.5%], supervisor $n= 64$ [15.3%] and employee $n= 263$ [62.9%]. Figure (5.13) visualises the sample titles of the respondents.

Table 5.6 present the demographic profile of the respondents.

Table 5.6 Demographics profile (N= 418).

Demographic	Subset	Count	%
Gender	Male	254	60.8%
	Female	164	39.2%
	Prefer not to say	--	--
	<i>Total</i>	<i>418</i>	<i>100%</i>
Age	30 years or less	148	35.4%
	31 – 39 years	189	45.2%
	40 – 49 years	67	16%
	50 years or more	14	3.3%
	<i>Total</i>	<i>418</i>	<i>100%</i>
Education Level	Diploma	7	1.7%
	Bachelor	362	86.6%
	Master or PH. D	49	11.7%
	<i>Total</i>	<i>418</i>	<i>100%</i>
Monthly salary/Income Level	300 JD or less	6	1.4%
	301 – 500 JD	194	46.4%
	501 – 700 JD	111	26.6%
	701 JD or more	107	25.6%
	<i>Total</i>	<i>418</i>	<i>100%</i>
Marital status	Married	256	61.2%
	Single	156	37.3%
	Other	6	1.4%
	<i>Total</i>	<i>418</i>	<i>100%</i>

Job Experience	5 years or less	118	28.2%
	6 – 10 years	176	42.1%
	11 – 15 years	70	16.7%
	16 years or more	54	12.9%
	<i>Total</i>	<i>418</i>	<i>100%</i>
Job title	Manager	47	11.2%
	Assistant manager	44	10.5%
	Supervisor	64	15.3%
	Employee	263	62.9%
	<i>Total</i>	<i>418</i>	<i>100%</i>

5.4.1 Descriptive data analysis and correlation matrix

This section gathers together the descriptive statistics, including the mean and standard deviation (Std.) and a correlation matrix for the constructs of concern in this study. The scale provided in the below Table 5.7, as suggested by Sekaran and Bougie (2019), was used to interpret mean levels. The scale suggests that high levels fall between (3.67–5.00), moderate levels fall between (2.34–3.669), and low-level falls between (1–2.339).

Table 5.7 Scale for interpreting mean levels .

Low Level	Moderate level	High level
1 – 2.339	2.34 – 3.669	3.67– 5.00

- *Part 1: Descriptive statistics:*

Descriptive data analysis results were displayed in three sections as follows:

- *Section 1: Levels of TL as reported by respondents*

Table (5.8) displays the mean and standard deviation values, as well as the minimum and maximum values, for the TL construct's dimensions. Respondents reported that their managers/supervisors practise TL to a moderate level. Considering that the overall mean value was scored (Mean = 3.07), one can conclude that managers/supervisors in the Jordanian banking sector practise TL to a moderate level, evidently showing a good indicator for those managers/supervisors. However, it is argued that those managers are still required to improve their TL practices.

All TL dimensions were reported with moderate levels of agreement, except for the intellectual stimulation dimension, which was reported with a high level of agreement. The highest mean value was for intellectual stimulation (Mean = 3.68), while the highest mean value was for idealised influence (Mean = 3.14), then individualised consideration (Mean = 2.92), and the least mean value was for inspirational motivation (Mean = 2.55). The findings demonstrate that those managers should focus more on practising inspirational motivation and individualised consideration due to their acknowledged significance in fostering employee performance and attitudes in the workplace, as these two dimensions scored the lowest mean values.

For individualised consideration assessments, std. value was above (1), indicating that assessments spanned away from their mean values, further indicating a sound of non-homogeneity in assessments, which can be explained by variations in managers' and/or supervisors' practises in surveyed banks. For the remaining dimensions assessments,

std. value was below (1), indicating that assessments spanned close to their mean values. The minimum value for all dimensions was 1 and the maximum value for all dimensions was 5, entailing that there were respondents who strongly disagreed with all statements and that there were respondents who strongly agreed with all statements, subsequently showing a case of non-homogeneity. Figure (5.14) displays descriptive statistics for the TL construct using a bar graph.

Table 5.8 Descriptive data analysis for TL construct (N= 418).

No.	Order	Dimension	Mean	Std.	Level	Min	Max
1	2	Idealized influence	3.14	0.85	Moderate	1.00	5.00
2	4	Inspirational motivation	2.55	0.80	Moderate	1.00	5.00
3	1	Intellectual stimulation	3.68	0.83	High	1.00	5.00
4	3	Individualized consideration	2.92	1.03	Moderate	1.00	5.00
<i>TL overall mean</i>			<i>3.07</i>		<i>Moderate</i>	--	--

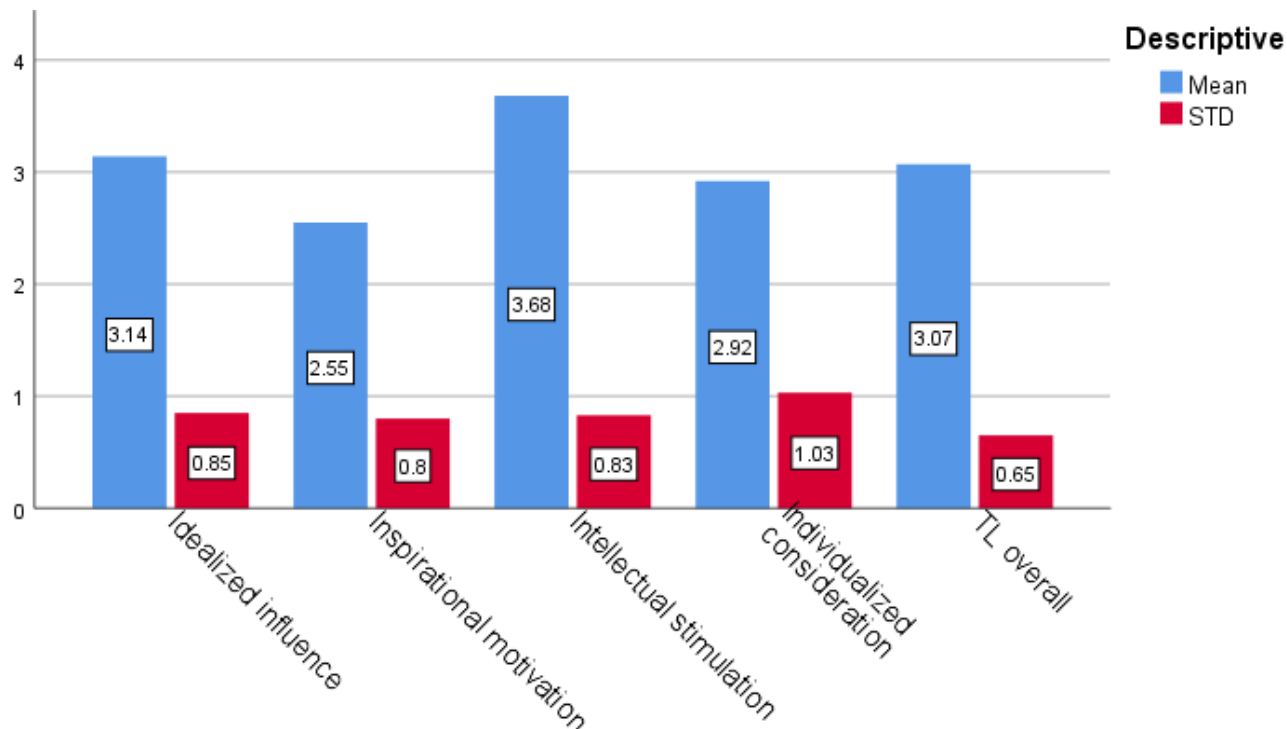


Figure 5.14 Descriptive statistics for TL construct.

Table (5.9) provides descriptive statistics for each statement on the TL scale in order to provide more detail regarding the respondent's agreement. Concerning idealised influence practices, agreement levels were moderate for all proposed statements. The highest agreement was provided on the statement suggesting *"My leader is ready to trust the person he/she is rating to overcome any obstacle,"* and the least agreement level was provided for the statement suggesting that the *"Top manager builds team identity and morals."* The findings demonstrate that all aspects of idealised influence were practised to a moderate level by managers/supervisors. The findings were similar concerning inspirational motivation aspects. As agreement levels were moderate on all proposed statements, the highest three practised aspects were *"My manager articulates a*

compelling vision of the future,” followed by “My manager achieves goals through realistic planning,” then “My manager talks enthusiastically about what needs to be accomplished.”

According to the results in Table (5.9), respondents strongly agreed on two proposed aspects related to intellectual stimulation, with mean values ranging from 3.79 to 3.77 for the statements *“My manager builds cooperative relationships with immediate colleagues”* and *“My manager gets others to look at problems from many different angles.”* Respondents agreed moderately on the other two proposed aspects, *“My manager encourages subordinates to work to their best potential”* and *“My manager values employees’ contributions”*.

In relation to individualised consideration, all aspects were reported with high agreement levels, and these aspects were ranked in the following descending order: *“My manager considers an individual as having different needs, abilities, and aspirations from others,”* then *“My manager provides work or assignments that are stretching and achievable,”* *“My manager encourages subordinates to re-think their ideas,”* *“My manager re-examines critical assumptions to question whether they are appropriate,”* and finally *“My manager tries to understand the other person’s viewpoint.”*

Finally, it is vital to note that all std. values were below (1) for all dimension statements except for individualised consideration statements, indicating agreement among the respondents for all proposed statements for all dimensions except for individualised consideration statements. Hence, for individualised consideration statements, assessments spanned away from their mean values, showing a level of non-homogeneity in the assessments. As stated earlier, this can be explained by variations in managers' and/or supervisors' practises in the surveyed banks.

Table 5.9 Descriptive data analysis for TL scale (N= 418).

No	Order	Statement	Mean	Std.	Level
<i>Idealized influence</i>					
13	2	Top manager changes their style and approach according to who they are dealing with.	3.22	0.97	Moderate
14	5	Top manager builds team identity and moral.	2.95	0.95	Moderate
15	1	My leader is ready to trust the person he/she is rating to overcome any obstacle.	3.28	0.97	Moderate
16	4	My manager initiates change, pursues goods beyond expectation.	3.08	0.98	Moderate
17	3	My manager suggests new ways of looking at how to complete assignments.	3.19	1.00	Moderate
<i>Overall mean</i>			3.14		Moderate
<i>Inspirational motivation</i>					
18	3	My manager talks enthusiastically about what needs to be accomplished.	2.54	0.92	Moderate
19	5	My manager inspires confidence in the value of his/ her argument.	2.49	0.89	Moderate
20	2	My manager achieves goals through realistic planning.	2.60	0.96	Moderate
21	4	My manager talks optimistically about the future.	2.50	0.84	Moderate
22	1	My manager articulates a compelling vision of the future.	2.63	0.95	Moderate
<i>Overall mean</i>			2.55		Moderate
<i>Intellectual stimulation</i>					

23	3	My manager encourages subordinates to work to their best potential.	3.62	0.93	Moderate
24	1	My manager builds co-operative relationships with immediate colleagues.	3.79	0.88	High
25	4	My manager values employees' contributions.	3.56	0.96	Moderate
26	2	My managers get others to look at problems from many different angles.	3.77	0.89	High
<i>Overall mean</i>			3.68		<i>High</i>
<i>Individualized consideration</i>					
27	2	My manager provides works or assignments that are stretching achievable.	2.96	1.18	Moderate
28	5	My manager tries to understand the other person's viewpoint.	2.82	1.15	Moderate
29	4	My manager re-examines critical assumptions to question whether they are appropriate.	2.88	1.15	Moderate
30	3	My manager encourages subordinates to re-think their ideas.	2.94	1.12	Moderate
31	1	My manager considers an individual as having different needs, abilities, and aspirations from others.	3.03	1.18	Moderate
<i>Overall mean</i>			2.92		<i>Moderate</i>

- *Section 2: Levels of Innovation as perceived by respondents:*

Referring to Table (5.10), the respondents reported that overall levels of innovation in their banks are high (Mean = 3.82). Furthermore, both product and process innovation had

high levels of agreement in terms of scoring mean values (Mean = 3.91) and (Mean = 3.73), respectively. Std. values were lower than (1), indicating that assessments spanned around their mean values, further indicating a level of homogeneity among respondents. The findings demonstrate satisfactory innovation levels in the Jordanian banking sector. Managers and supervisors should therefore make effort to maintain and keep such favourable innovative performance. Figure (5.15) displays the descriptive statistics for the innovation construct via a bar graph.

Table 5.10 Descriptive data analysis for innovation construct (N= 418).

No.	Order	Dimension	Mean	Std.	Level	Min	Max
1	1	Product	3.91	0.65	High	1.68	5.00
2	2	Process	3.73	0.73	High	1.20	5.00
<i>Innovation overall mean</i>			3.82		<i>High</i>	--	--

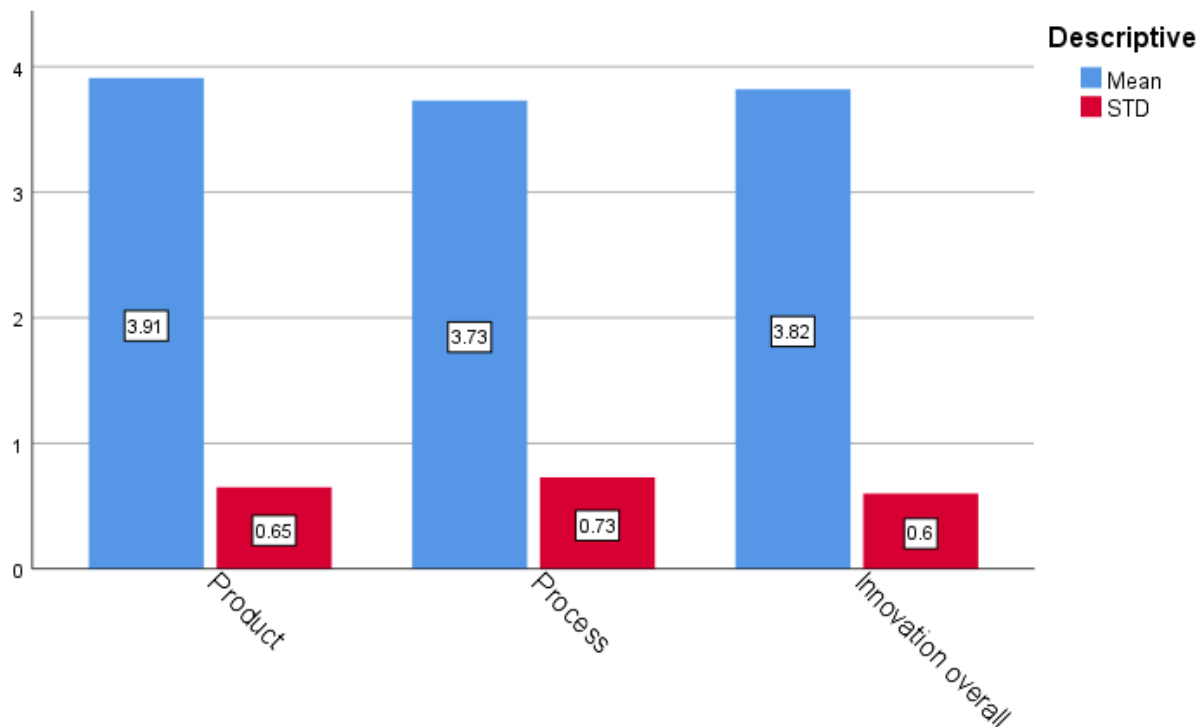


Figure 5.15 Descriptive statistics for innovation construct.

The following table (5.11) provides a descriptive analysis of the innovation scale. Regarding product innovation, all aspects were in a high level of agreement, except one aspect, suggesting *“The bank applies new technologies and software to add new services and improve the quality of current services”* which was in a moderate level of agreement. Meanwhile, the highest product innovation in the banking sector in Jordan was in the aspect *“The bank initiates the development of new services based on market trends.”* Agreement was seen in all aspects as neither of the standard values were above.

The respondents highly agreed on two aspects related to product innovation. The highest agreement levels were for the following aspects: *“The bank provides significant improvements in its structures, practices, and techniques”* and *“The bank tracks the relevant best practises to improve its process.”* The remaining aspects were seen as having moderate levels of agreement.

The findings show acceptable innovation performance in terms of product and process. This requires managers/supervisors fostering their performance to maintain such favourable performance outcomes.

Table 5.11 Descriptive data analysis for innovation scale (N= 418).

No	Order	Statement	Mean	Std.	Level
<i>Product</i>					
1	5	The bank follows a formal process to generate and nurture new ideas.	4.00	0.81	High
2	3	The bank initiates the development of new services based on customers' needs.	4.02	0.74	High
3	1	The bank initiates the development of new services based on market trends.	4.11	0.74	High
4	7	The bank applies new technologies and software to add new services and improve the quality of current service.	3.19	0.79	Moderate
5	4	The bank adopts new/non-traditional solutions to solve problems.	4.00	0.76	High
6	2	The bank initiates new services to improve customers' access to goods or services.	4.08	0.72	High
7	6	The bank introduces new or significantly improved services into the market before its competitors.	4.00	0.74	High
<i>Overall mean</i>			3.91		<i>High</i>
<i>Process</i>					

8	4	The bank follows a formal process to keep on improving its services to customers.	3.59	0.99	Moderate
9	2	The bank tracks the relevant best practices to improve its process.	3.92	0.81	High
10	5	The bank follows flexible management strategies to deal with unexpected changes.	3.50	0.89	Moderate
11	1	The bank provides significant improvements in its structures, practices and techniques.	4.05	0.69	High
12	3	The bank introduces more developed and distinctive strategies to manage its process, in comparison with competitor's strategies.	3.62	0.94	Moderate
<i>Overall mean</i>			3.73		<i>High</i>

- *Section 3: Levels of Interpersonal trust and knowledge sharing as perceived by respondents:*

As per the results shown in Table (5.12), respondents reported that both knowledge sharing and interpersonal trust levels were moderate in their banks; mean values were (Mean = 3.29) and (Mean = 3.34), respectively. These findings suggest that knowledge sharing, and interpersonal trust are still subject to improvement in the Jordanian banking sector. This requires the attention of directors. Both std. values were below (1) showing homogeneity among respondents. Figure (5.16) displays descriptive statistics for interpersonal trust and knowledge sharing constructs using a bar graph.

Table 5.12 Descriptive data analysis for interpersonal trust and knowledge sharing constructs (N= 418).

No.	Order	Dimension	Mean	Std.	Level	Min	Max
1	2	Interpersonal trust	3.29	0.75	Moderate	1.00	5.00
2	1	Knowledge sharing	3.34	0.79	Moderate	1.00	5.00

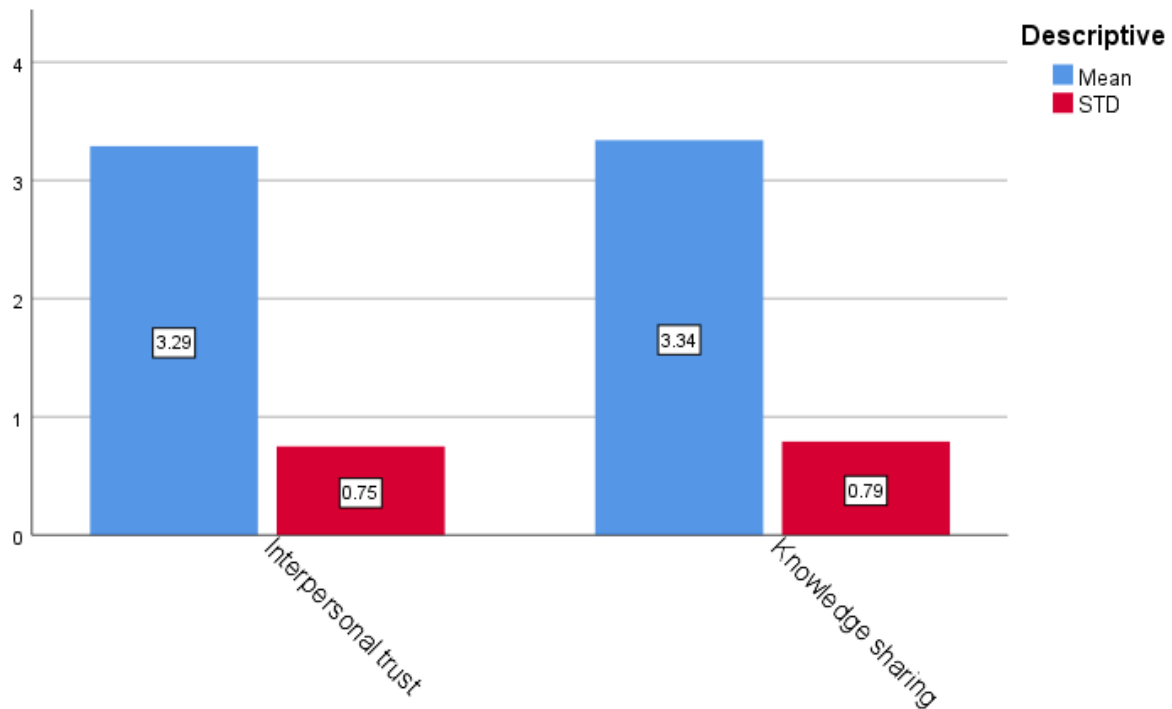


Figure 5.16 Descriptive statistics for interpersonal trust and knowledge sharing constructs.

Further detail is provided in Table (5.13) regarding knowledge sharing and interpersonal trust scales. Concerning interpersonal trust, all aspects were reported to have a moderate level of agreement, with the exception of one aspect, which was reported to have a high level of agreement: *“If I got into difficulties at work, I know my colleagues would try and help me out.”* The remaining aspects were in moderate levels of agreement with mean values ranging between (Mean = 3.43) and (Mean = 2.90). The least mean value was for the aspect suggesting *“Management at my firm is sincere in its attempts to meet the workers' point of view”*. Non-homogeneity in assessments was seen for a few aspects, suggesting that respondents' assessments varied on these aspects.

Regarding the knowledge sharing scale, respondents reported that all aspects related to knowledge sharing were moderate in their banks, and all mean values were in moderate

levels of agreement. The highest agreement was on the aspect suggesting “*When I have to know or to learn something, I refer to my colleagues as a source of knowledge*”, followed by “*I share the information I have with colleagues within my team when they ask me to*”, then “*Knowledge sharing with my colleagues within my department is considered a normal thing*”. Again, non-homogeneity in assessments was observed for a few aspects, suggesting that respondents’ assessments varied on these aspects.

Table 5.13 Descriptive data analysis for interpersonal trust and knowledge sharing scales (N= 418).

No	Order	Statement	Mean	Std.	Level
.					
<i>Interpersonal trust</i>					
32	12	Management at my firm is sincere in its attempts to meet the workers' point of view.	2.90	0.98	Moderate
33	5	Our firm has a poor future (unless it can attract better managers).	3.34	1.08	Moderate
34	1	If I got into difficulties at work, I know my workmates would try and help me out.	3.78	0.90	High
35	9	Management can be trusted to make sensible decisions for the firm's future.	3.23	0.98	Moderate
36	3	I can trust the people I work with to lend me a hand if it's needed.	3.37	0.92	Moderate
37	8	Management at work seems to do an efficient job.	3.30	0.95	Moderate

38	11	I feel quite confident that the firm will always try to treat me fairly.	2.98	0.72	Moderate
39	7	Most of my workmates can be relied upon to do as they say they will do.	3.31	0.96	Moderate
40	6	I have full confidence in the skills of my workmates.	3.32	0.98	Moderate
41	4	Most of my fellow workers would get on with their work even if supervisors were not around.	3.36	1.23	Moderate
42	10	I can rely on other workers not to make my job more difficult by careless work.	3.19	0.91	Moderate
43	2	Our management would be quite prepared to gain advantage by deceiving the workers. *	3.43	1.03	Moderate
<i>Overall mean</i>			3.29		<i>Moderate</i>
<i>Knowledge sharing</i>					
44	8	When I have learned something new, I tell my colleagues in my team about it.	3.03	1.03	Moderate
45	2	I share the information I have with colleagues within my team when they ask me to.	3.56	0.94	Moderate
46	4	I think it is important that my colleagues have specific knowledge of my work.	3.41	1.00	Moderate
47	6	I regularly tell my colleagues about the ins and outs of my work.*	3.28	1.02	Moderate
48	7	Colleagues within my team tell me what they know when I ask them about it.	3.14	1.03	Moderate
49	5	When they've learned something new, colleagues within my department tell me about it.	3.30	0.96	Moderate

50	1	When I have to know or to learn something, I refer to my colleagues as a source of knowledge.	3.59	0.90	Moderate
51	3	Knowledge sharing with my colleagues within my department is considered a normal thing.	3.43	0.95	Moderate
Overall mean			3.34		Moderate

***Reverse statements were reverse coded**

- *Part 2: Correlation matrix:*

The correlation matrix is presented in Table (5.14). All correlations were observed in their expected direction, providing initial support for our proposed hypotheses. Furthermore, product ($r = 0.549$) and process ($r = 0.448$) correlated significantly and positively with TL at the 0.01 level, as did product ($r = 0.377$) and process ($r = 0.251$) with interpersonal trust. Meanwhile, product ($r = 0.499$) and process ($r = 0.360$) correlated significantly and positively with knowledge sharing. Finally, both interpersonal trust ($r = 0.462$) and knowledge sharing ($r = 0.577$) correlated significantly and positively with TL.

Table 5.14 Correlation matrix (N= 418).

	1	2	3	4	5
Product	1				
Process	0.511**	1			
TL	0.549**	0.448**	1		
Interpersonal trust	0.377**	0.251**	0.462**	1	
Knowledge sharing	0.499**	0.360**	0.577**	0.548**	1

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

5.4.2 Factors profile using Exploratory Factor Analysis (EFA)

EFA was applied with the help of SPSS v.26 to identify the underlying dimensions of the scales that were used (Costello & Osborne, 2005). As a factor extraction method, Principal Component Analysis (PCA) was used. For rotation, we have two available approaches: Varimax rotation, an orthogonal rotation approach, which anticipates that the factors do *not correlate* with each other, unlike the Promax rotation, which is a form of oblique rotation approach that is widely used in social science disciplines as it anticipates that a correlation may exist among factors. In conducting EFA, the following criteria were used to retain factors:

1. Kaiser-Mayer-Olkin (KMO) greater than (60%) to ensure that cumulative common variance explained by the dataset is fairly satisfactory (Byrne, 2016).
2. Bartlett's Test of Sphericity should be significant ($P \leq 0.05$) to support the suitability of data for factor analysis (Byrne, 2016).
3. Eigen value should be greater than 1, along with having meaningful conceptually sound factor structure (Pett et al., 2003).
4. Factor loading for statements should exceed the minimum level of (0.50) and is recommended to exceed (0.70) with no cross loading with other factors (Byrne, 2016).

EFA was conducted for the overall measurement model using Promax rotation. The dataset explained a fairly satisfactory cumulative common variance as KMO scored (93.9%) see Table (5.16), along with having Bartlett's Test of Sphericity significant [$\chi^2 (1275) = 18771.003$, Sig. = 0.000]. Moving on to retained factors, 9 factors were retained as they scored eigen values greater than (1) with a cumulative explained variance of 75.046%, denoting a fairly satisfactory variance. In examining retained factors, there were

4 items cross-loaded in the matrix. These items were Prod1, IT1, IT12, and KS4. Furthermore, all items were seen to have FL greater than the (0.50) acceptable level for FL. The below tables (5.15-5.16) present the results of EFA for the original model.

Table 5.15 Total Variance Explained – original model.

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loading
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	17.783	34.868	34.868	17.783	34.868	34.868	11.254
2	4.899	9.606	44.474	4.899	9.606	44.474	11.331
3	4.078	7.997	52.471	4.078	7.997	52.471	11.245
4	2.944	5.773	58.243	2.944	5.773	58.243	6.951
5	2.227	4.367	62.611	2.227	4.367	62.611	8.883
6	2.046	4.011	66.621	2.046	4.011	66.621	10.238
7	1.939	3.801	70.422	1.939	3.801	70.422	7.724
8	1.307	2.563	72.985	1.307	2.563	72.985	9.965
9	1.051	2.061	75.046	1.051	2.061	75.046	3.669

Table 5.16 Pattern Matrix – original model.

Kaiser-Mayer-Olkin test (0.939)									
Bartlett's Test of Sphericity [χ^2 (1275) = 18771.003, Sig. = .000]									
Pattern Matrix^a									
	Component								
	1	2	3	4	5	6	7	8	9
Prod1		.593							.394
Prod2		.910							
Prod3		.844							
Prod4		.828							
Prod5		.905							
Prod6		.925							
Prod7		.919							
Proc1							.913		
Proc2							.728		
Proc3							.950		
Proc4							.512		
Proc5							.967		
II1						.922			
II2						.799			
II3						.760			
II4						.858			

II5						.870			
IM1				.848					
IM2				.869					
IM3				.889					
IM4				.894					
IM5				.823					
IS1								.885	
IS2								.812	
IS3								.910	
IS4								.890	
IC1					.896				
IC2					.894				
IC3					.927				
IC4					.822				
IC5					.861				
IT1	.525								.381
IT2	.889								
IT3	.595								
IT4	.832								
IT5	.923								
IT6	.767								
IT7	.774								
IT8	.686								
IT9	.816								

IT10	.931								
IT11	.739								
IT12R	.458								.401
KS1			.771						
KS2			.849						
KS3			.700						
KS4R			.546						.678
KS5			.839						
KS6			.803						
KS7			.616						
KS8			.840						

The instrument was revised by dropping cross-loaded items. The sound of a better matrix was obtained as the dataset explained a fairly satisfactory cumulative common variance as KMO scored (94.1%), along with having Bartlett's Test of Sphericity significant [$\chi^2(1081) = 17218.539$, Sig. = 0.000]. Further, 8 factors, as expected, were retained as scored eigenvalues greater than (1) with a cumulative explained variance of 74.648% donating a fairly satisfactory variance. Moreover, no cross loading was seen in the matrix and all items were seen to have FL greater than the (0.50) acceptable level for FL. The below tables (5.17-5.18) present the results of EFA for the revised model. See Appendix (4) for full EFA results.

Table 5.17 Total Variance Explained – revised model.

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loading
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	16.859	35.870	35.870	16.859	35.870	35.870	10.363
2	4.331	9.216	45.086	4.331	9.216	45.086	10.687
3	3.807	8.101	53.187	3.807	8.101	53.187	11.392
4	2.816	5.992	59.178	2.816	5.992	59.178	6.666
5	2.097	4.461	63.639	2.097	4.461	63.639	8.758
6	2.014	4.285	67.924	2.014	4.285	67.924	9.828
7	1.866	3.971	71.894	1.866	3.971	71.894	7.444
8	1.294	2.754	74.648	1.294	2.754	74.648	9.897

Table 5.18 Pattern Matrix – revised model.

Kaiser-Mayer-Olkin test (0.941)								
Bartlett's Test of Sphericity [χ^2 (1081) = 17218.539, Sig. = .000]								
Pattern Matrix^a								
	Component							
	1	2	3	4	5	6	7	8
Prod2		.918						
Prod3		.836						
Prod4		.805						
Prod5		.915						
Prod6		.926						
Prod7		.930						
Proc1							.912	
Proc2							.721	
Proc3							.945	
Proc4							.501	
Proc5							.960	
II1						.899		
II2						.806		
II3						.738		
II4						.841		

II5						.857		
IM1				.867				
IM2				.888				
IM3				.886				
IM4				.890				
IM5				.820				
IS1								.891
IS2								.819
IS3								.906
IS4								.902
IC1					.903			
IC2					.897			
IC3					.928			
IC4					.831			
IC5					.867			
IT1	.597							
IT3	.612							
IT4	.886							
IT5	.898							
IT6	.813							
IT7	.767							
IT8	.728							
IT9	.829							
IT10	.876							

IT11	.769							
KS1			.784					
KS2			.889					
KS3			.751					
KS5			.886					
KS6			.856					
KS7			.666					
KS8			.882					

Cronbach alpha was conducted for the revised factors to confirm the factor's reliability. The minimum threshold for Cronbach alpha is 0.70 (Hair et al., 2019). All factors have acceptable Cronbach alpha values, showing satisfactory reliability. Cronbach alpha values scored as follows: product (0.946), process (0.895), idealised influence (0.924), inspirational motivation (0.927), intellectual stimulation (0.927), individualised consideration (0.936), interpersonal trust (0.935) and knowledge sharing (0.929).

Table 5.19 Cronbach alpha for original scales (N = 418).

Factor	N	Cronbach alpha
Product	6	0.946
Process	5	0.895
Idealized influence	5	0.924
Inspirational motivation	5	0.927
Intellectual stimulation	4	0.927
Individualized consideration	5	0.936
Interpersonal trust	10	0.935
Knowledge sharing	7	0.929

5.5 Summary

This chapter has provided detail regarding the data analysis and descriptive statistics results. In sum, a total of 418 usable responses were deemed suitable for further analysis after excluding 168 responses that had regular patterns, and further two observations that were excluded due to being outliers. Furthermore, a preliminary analysis validated data suitability for parametric analysis, normality, multicollinearity, and bias, which were established to be not serious issues. The demographic profile showed diversity in the sample in terms of gender, age, education, experience, and salary, etc. Additionally, the descriptive analysis provided many indicators concerning TL practises and innovation performance in the banking sector in Jordan, as TL levels were moderate, innovation levels were high, and both interpersonal trust and knowledge sharing levels were moderate. Finally, EFA provided insights into the essential underlying structure of the dataset. Through dropping 4 items, we were able to extract a clear component matrix that satisfied scale structure. Cronbach alpha determined the internal consistency for our revised scales, and the gathered results in this phase prepared the data for Structural Equation Modelling analysis.

Chapter 6: Empirical findings

This chapter proceeds by presenting the empirical findings. To begin, the measurement model was validated by applying CFA, then a structural model was tested through path analysis to provide a decision for the proposed hypotheses. Structural Equation Modelling (SEM) AMOS was applied to test both the measurement model and the structural model. Following this, a comprehensive description of testing measurement models and structural models is provided. CFA based on MLE was used to complete the data analysis using AMOS v.23. Both the measurement model and the structural model were subsequently tested. This research adopted the guidelines of Anderson and Gerbing (1988) and Hair et al. (2019) to complete the analysis.

Section 1 introduces the chapter, with an overview of CFA, sample size, and estimation technique (Maximum Likelihood). Meanwhile, Section 2 provides a measurement model assessment, comprising six sub-sections as follows: model fit, original first-order measurement model, model modification, revised first-order measurement model, revised second-order measurement model, and then validity and reliability of the measurement model. Section 3 proceeds with structural model testing using path analysis. This includes testing direct and indirect relationships. Finally, section four provides a summary of the chapter.

6.1 An overview of Structural Equation Modelling

SEM is a statistical approach that is grounded in a confirmatory method to examine a structural theory. The theory is a representation of a causal process that is based on generating observations for a set of variables (Bentler, 1988; Reisinger & Mavondo, 2007; Byrne, 2016). According to Byrne (2016), two main parts make up the essentials of the SEM procedure. The first part involves the series of structural equations that represent the causal process under investigation, while the second involves the modelling of structural relations, which allows for a better conceptualization of the theory under focus. Simultaneous analysis of the overall system that comprises all variables of concern is applied to examine the consistency of the model with the data. In the case of satisfactory fit, this entails that postulated relations among variables are plausible.

Referring to Anderson and Gerbing (1988), Byrne (2016), and Hair et al. (2019), two sub-models decompose the SEM model: the measurement model and the structural model. By connecting the scores between the measuring tool and the underlying factors that are expected to measure, the measurement model examines the relationships between unobserved and observed variables. This measurement model is conveyed through the CFA model, which represents and looks at the patterns for each measure item that should be loaded into a particular factor. The structural model specifies the way that a latent variable effects changes in the values of other specified latent variables in the model, either directly or indirectly. It explores interactions between unobserved variables.

As a special sort of SEM, CFA examines the relationships between indicators (observed measures) and latent components to manage measurement models (Hoyle, 2000). Furthermore, the goal of CFA is to identify the kind and quantity of factors that adequately account for variance and covariation among variables (Brown & Moore, 2012).

Furthermore, a number of scholars (Hoyle, 2000; Brown & Moore, 2012; Brown, 2015; Hox 2021) argue that the ultimate goal of CFA is to replicate a smaller set of latent variables based on the relationships between a set of observed indicators. However, CFA is more appropriate in later stages of scale development, especially when the underlying structure is well-known from prior empirical findings and has solid theoretical underpinnings.

According to Schreiber et al. (2006), CFA is a theory-driven confirmatory approach. In CFA, a population's covariance matrix is calculated using the hypothesised model. Moreover, the observed covariance matrix is compared in order to reduce the discrepancies between the two matrices.

A variety of purposes can be fulfilled through CFA, including examining psychometric properties, construct validation, and testing measurement invariance, etc. Brown and Moore (2012) noted that the most common use of CFA nowadays is examining the latent structure of an instrument for scale development. CFA is a better analytic approach for validating constructs, and its findings may be used to show both discriminant and convergent validity (Hoyle, 2000). The findings of the CFA are presented in the following sections to evaluate the measurement model's fundamental components and validate its elements.

6.2 Sample size

Scholars such as Wolf et al. (2013) and MacCallum et al. (1999) argue that determining the required sample size for the SEM is a challenge for researchers. Despite this, SEM is extremely versatile in estimating association by utilising a variety of data types and establishing comparisons across a wide range of alternative models. Moreover, such

flexibility raises the difficulty of developing generalised guidelines for determining the appropriate sample size.

SEM is a statistical method that provides estimates based on covariances, which can be seen as correlations that provide unstable results when assessed for small samples (Kyriazos, 2018). Given that parameter estimates, goodness of fit indices, and chi-square for a particular are sensitive to sample size, sample size is important for SEM analysis, leading the SEM literature to claim that SEM is a technique that is built on large samples (Kline, 2016).

Various guidelines may be found while reading the SEM literature, such as a requirement for at least 100 or 200 observations (Boomsma, 1985), 10 cases for each variable (Nunnally, 1967), and another guideline that advises 5 or 10 observations for each parameter (Bollen, 2014). Hair et al. (2006) state that a standard requirement of a sample size for SEM cannot be determined. However, the absolute minimum required sample should be at a minimum greater than the number of intercorrelations in the data matrix.

Researchers argue that SEM analysis is problematic for small samples; in fact, small samples may not support complex models' estimation. Thus, researchers such as Hair et al. (2006) and Schreiber et al. (2006) state that any sample size greater than 200 can be considered sufficient for SEM analysis.

As this study aims to apply CFA, this study adopted Bentler and Chou's (1987) suggestions for the required sample size. Bentler and Chou (1987) recommend that each parameter in the instrument have a minimum of 10 observations (the ratio is 10:1 parameter). However, as the instrument has 51 Likert-based parameters, this requires a sample of a minimum of $51 \times 10 = 510$ observations. In this study, a total of 627 questionnaires were distributed, of which 588 were filled and returned, resulting in a

response ratio of 93.77%. Data screening confirmed the validity of 418 questionnaires for subsequent analysis.

6.3 Estimation technique (Maximum Likelihood):

Maximum Likelihood Estimation was used to establish the data analysis in this study (MLE). MLE was developed by R.A. Fisher in the 1920s and is an estimating method for determining values in a mathematical model parameter. Myung (2003) notes that MLE is the one that most likely interpretations of observed data.

According to Kleinbaum and Klein (2010), MLE's relevance is determined by its ability to manage independent variables regardless of their type (interval, ordinal, or nominal). MLE is preferred for large samples, making it a superior approach in model estimation (Hox, 2021). However, it is also argued by Hair et al. (2006) that MLE can provide valid results for small samples. The logic of MLE is to minimize differences between the estimated covariance matrix and the observed matrix (reproducing covariance matrix) with no change in the focus on the explained variance entailing that R^2 is a “by-product of the overall statistical objective of achieving good model fit” (Hair et al., 2014 cited in Astrachan et al., 2014.p.17), rather than maximizing explained variance as in Partial Least Squares SEM, making MLE superior for model fit such as in AMOS (Hair et al., 2014).

Myung (2003) and Hair et al. (2019) state that MLE has many preferred properties over other estimation approaches. These properties include: parameterization invariance, which means that the solution provided by MLE can be obtained regardless of the parameterization used; sufficiency, which means that for parameters in focus entered into the MLE estimator, complete information about its parameter is available; efficiency, which means that the lowest possible variance of estimation for parameters is achieved

asymptotically in this approach; and finally, consistency, which means that for the true value of parameters that generated data is recovered asymptotically.

6.4 Measurement Model Assessment (CFA)

A measurement model allows for examining covariation and interrelationships among latent constructs prior to structural model testing. Moreover, the overall model demonstrates the extent to which specified indicators can represent the suggested factors. This process comprises testing unique variances, factor loadings, and modification indexes (Schreiber et al., 2006; Hair et al., 2019). In fact, Hox (2021) has suggested that factor analysis for measurement models based on the presumed correlations between a set of observable components is the modelling of measures through latent variables (factors). Hox (2021) has also stated that the measurement models are a collection of measures that assess specific concepts indirectly. The first step in SEM analysis before testing the structural model is evaluating the measurement model (Anderson & Gerbing, 1988).

The evaluation, however, seeks to determine whether the data matches well with the suggested model. Additionally, CFA is used to conduct the assessment (Hair et al., 2019). Cheng (2001) argues that it is possible to investigate the connections between model elements when the measurement model is in place.

Using AMOS v.23, CFA was used to validate the factorial structure of the measures and the factor structure (Byrne, 2001). To test the overall model, we entered all the items corresponding to its dimensions into the measurement model (multidimensional), since this model allows for testing discriminant validity, whereas testing each construct

separately—Transformational Leadership (TL) alone, innovation alone, and mediators alone—does not permit examining discriminant validity among key constructs. This study followed Anderson and Gerbing's (1988) instructions to evaluate the measurement model; their criteria call for determining the model's goodness of fit before confirming its validity and reliability. The next subsections present the research findings.

6.4.1 Model fit

The assessment of model fit was based on a variety of important factors, which AMOS offers through goodness of fit indices. Fit indices look at how comparable the covariance matrices from the model estimation and the sample database are. The decision to accept or reject the model is based on these criteria (McDonald & Ho, 2002; Hair et al., 2006; 2019). Various fit indices are available in AMOS v.23 and choosing the set of indices to report is subject to argument in the SEM literature. In this study, the most frequent indices that the majority of the SEM literature recommends were reported. The reported indices were proposed by a number of scholars (Browne & Cudeck, 1993; & Hu & Bentler, 1999; Byrne, 1994; Kline, 2015; Hair et al., 2019) to confirm goodness of fit for the measurement model. The included indices are explained below:

1. **CMIN/ DF [χ^2]:** The model chi-square examines overall fit and discrepancy between the fitted covariance matrix and sample matrix. This index is the traditional measure for examining the overall fit of the model. The insignificant result at the 0.05 level shows a good model fit. Recommended cut-off criteria for this index are: <3 excellent fit, meanwhile <5 acceptable. (Byrne, 1994; Hu & Bentler, 1999; Barrett, 2007; Kline, 2015; Hair et al., 2019). The algebraic definition for this index is below:

$$\chi^2 = -2 \left\{ -\frac{1}{2}(n-1) \left[\text{tr}(\mathbf{S}\mathbf{\Sigma}^{-1}) + \log|\mathbf{\Sigma}| - \log|\mathbf{S}| - p \right] \right\} = (n-1)F$$

2. **Comparative Fit Index [CFI]:** This index compares fit between the null model and the targeted model; the assumption for this index is that all latent factors are uncorrelated (null/independence model); and a comparison is made between the null model and sample covariance matrix. The recommended cut-off criteria for this index are: > 0.95 for excellent fit, while > 0.90 is acceptable. (Bentler, 1990; Byrne, 1994; Hu & Bentler, 1999; Kline, 2015; Hair et al., 2019). The algebraic definition for this index is below:

$$CFI = 1 - \frac{\max\left[\left(\chi_t^2 - \nu_t\right), 0\right]}{\max\left[\left(\chi_t^2 - \nu_t\right), \left(\chi_i^2 - \nu_i\right), 0\right]}$$

3. **Tucker Lewis Index [TLI]:** Tucker and Lewis (1973) developed this index to measure the relative reduction in misfit based on the degree of freedom. The recommended cut-off criteria for this index are: > 0.95 for excellent fit, while > 0.90 is acceptable. (Hu & Bentler, 1999). The algebraic definition for this index is below:

$$\widehat{TLI} = \frac{\chi_0^2/df_0 - \chi_k^2/df_k}{\chi_0^2/df_0 - 1}.$$

4. **Root Mean Square Error of Approximation [RMSEA]:** This is a parsimony adjusted index. This index measures how well a population covariance matrix fits a model with optimally specified parameter estimates. Recommended cut-off

criteria for this index are < 0.05 good, and <0.08 is acceptable (Byrne, 1994; Byrne, 2013; Hu & Bentler, 1999; Byrne, 2013; Kline, 2015; Hair et al., 2019). The algebraic definition for this index is below:

$$RMSEA = \sqrt{\max \left\{ \left(\frac{F(\mathbf{S}, \mathbf{\Sigma}(\hat{\boldsymbol{\theta}}))}{\nu} - \frac{1}{n-1} \right), 0 \right\}}$$

A summary of the goodness of fit indices and the suggested criteria that were used to interpret goodness of fit for all models in the next sections can be found in Table (6.1). The goodness of fit standards were put forward by Browne and Cudeck (1993), Hu and Bentler (1999), Byrne (1994), Kline (2015), and Hair et al. (2019).

Table 6.1 Summary for goodness of fit indices and related recommended criterias.

Indices	Cutoff Criteria		
	Terrible	Acceptable	Excellent
CMIN	--	--	--
DF	--	--	--
CMIN/ DF	>5	>3	>1
CFI	<0.90	<0.95	>0.95
TLI	<0.90	<0.95	>0.95
RMSEA	>0.08	>0.06	<0.05

To assess the goodness of fit of the measurement model, we first had to examine the first-order model and then the second-order model. The results were as follows:

6.4.2 Original first-order measurement model:

Initially, the measurement model was designed as a first-order multidimensional model, while taking into consideration that we have TL and innovation latent constructs that have many dimensions. The initial examination for the original first-order measurement model depicted in Figure (6.1) indicated a poor fit for the model with data, as most of the fit indices were below suggested acceptable values: χ^2 (3305.246), df (1196), CFI (0.885), TLI (0.877), RMSEA (0.065). See appendix (6) for original Amos generated output. All items were found to have Factor Loading [FL] coefficients above the minimum acceptable level (0.50) (Hair et al., 2010; Hair et al., 2019). The FL for the original first-order measurement model is presented in Table (6.2). Considering that the model has a poor fit, we revised our measurement model to improve its fit with the data.

Table 6.2 FL coefficients for original first-order measurement model.

Construct	Dimension	Item	Standardized coefficient for FL	t-value
Innovation	Product	Prod1	0.66	--*
		Prod2	0.90	16.036*
		Prod3	0.84	15.156*
		Prod4	0.80	14.534*
		Prod5	0.89	15.911*
		Prod6	0.86	15.485*
		Prod7	0.88	15.704*
	Process	Proc1	0.84	--*
		Proc2	0.75	17.595*
		Proc3	0.84	20.827*
		Proc4	0.66	14.691*
		Proc5	0.89	22.492*
TL	Idealized influence	II1	0.87	--*
		II2	0.80	20.453*
		II3	0.80	20.833*
		II4	0.87	23.822*
		II5	0.87	24.045*
	Inspirational motivation	IM1	0.88	--*
		IM2	0.90	26.608*
		IM3	0.84	23.106*
		IM4	0.79	20.797*

		IM5	0.82	21.799*
	Intellectual stimulation	IS1	0.87	--*
		IS2	0.84	22.555*
		IS3	0.89	24.919*
		IS4	0.89	25.335*
	Individualized consideration	IC1	0.86	--*
		IC2	0.90	25.021*
		IC3	0.86	23.136*
		IC4	0.87	23.506*
		IC5	0.83	21.796*
Interpersonal trust		IT1	0.62	13.077*
		IT2	0.79	17.356*
		IT3	0.67	14.329*
		IT4	0.83	18.471*
		IT5	0.87	19.554*
		IT6	0.77	--*
		IT7	0.78	17.095*
		IT8	0.74	16.098*
		IT9	0.86	19.354*
		IT10	0.74	16.128*
		IT11	0.72	15.574*
		IT12R	0.62	13.087*
		KS1	0.77	18.959*
		KS2	0.86	22.864*

Knowledge sharing	IS3	0.79	19.819*
	IS4R	0.56	12.221*
	KS5	0.79	20.018*
	KS6	0.85	22.427*
	KS7	0.75	18.536*
	KS8	0.86	--*

* $P < 0.001$

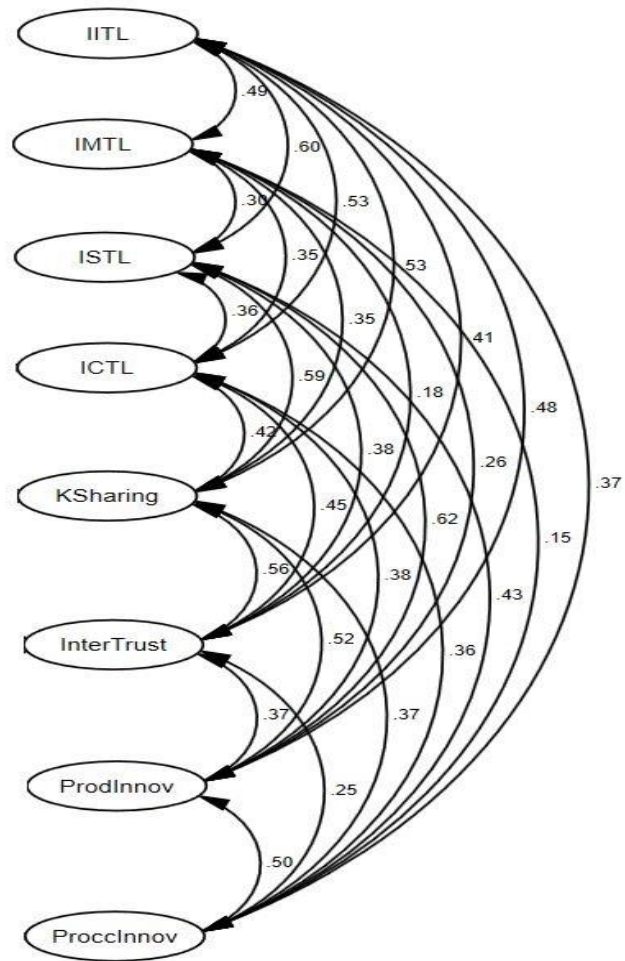


Figure 6.1 Original first-order measurement model.

6.4.3 Model modification

Since the measurement model did not match the data well, it was decided that the model needed to be revised. To achieve this, offending estimations should be investigated, and as many estimated coefficients as possible should fall inside the model's permissible range (Hair et al., 2019). Before examining the hypothesised effects between variables, it is essential to rectify theoretically flawed estimates. According to Cheng (2001), model adjustment is required if any indicator fails to capture its recommended underlying construct. To direct the revising process, this study adopted the recommendations made by Schumacker and Lomax (2004), Awang (2014), and Hair et al. (2010; 2019) as follows:

1. **Item Factor Loading (FL):** FL is the partial correlation coefficient between items and their suggested factors. An item with FL less than (0.50) should be removed because we set a minimum value of (0.50) for FL. In fact, low FL indicates that the item is not valid to measure the construct.
2. **Item squared multiple correlation (R^2):** Item R^2 measures item variance explained by its latent factor. Any item with an R^2 below (0.40) should be dropped from the model.
3. **Modification Indices (MI):** MI examines the extent to which model chi-square value would decrease (increase model fit) if the item were un-constrained or removed from the model. Any item with an MI greater than (.15) should be dropped or correlated with its pair with a high redundancy. Any two items for which their MI requires correlation imply that there is a covariance error within the construct.
4. **Standardized residual covariances:** These demonstrate the standardized differences between the observed covariance matrix for collected data and the proposed covariances based on the proposed model. Any item that has a

cumulative standardised residual covariance greater than (0.400) should be dropped from the model.

Earlier guidelines were adopted to revise our model. We conducted a series of CFAs, each time making one modification in the model and checking it after each change. In total, 8 items were dropped from the model. Items were dropped due to issues in MI, R2 and standardised residual covariances. Thus, the decision to drop these items was based on a combination of earlier guidelines. Dropped items were in the following order of attempts: IT12, KS4, IT10, PROC4, IT9, PROD4, IT7, and IT5. Table (6.3) provides a summary of dropped items during model modification.

Table 6.3 A summary for dropped items during model modification.

Construct	Item	Standardized coefficient for FL	t-value
Interpersonal trust	IT12	0.62	13.087*
	IT10	0.74	16.128*
	IT9	0.86	19.354*
	IT7	0.78	17.095*
	IT5	0.87	19.554*
Knowledge sharing	KS4	0.56	12.221*
Process	Proc4	0.66	14.691*
Product	Prod4	0.80	14.534*

* $P < 0.001$

6.4.4 Revised first-order measurement model

The revised first-order measurement model depicted in Figure (6.2) exhibited a satisfactory fit: χ^2 (1497.424), df (828), CFI (0.954), TLI (0.950), RMSEA (0.044). See appendix (6) for original Amos generated output. In fact, all retained items had FL coefficients greater than (0.50) and t values greater than (1.96). Table (6.4) presents the FL coefficient for the revised first-order measurement model. As we have TL and Innovation as second-order multidimensional constructs, the revised measurement model was also designed as a second-order model.

Table 6.4 FL coefficients for revised first-order measurement model.

Construct	Dimension	Item	Standardized coefficient for FL	t-value
Innovation	Product	Prod1	0.67	--*
		Prod2	0.92	16.475*
		Prod3	0.84	15.292*
		Prod5	0.88	15.916*
		Prod6	0.86	15.701*
		Prod7	0.85	15.537*
	Process	Proc1	0.85	--*
		Proc2	0.72	16.793*
		Proc3	0.87	21.944*
		Proc5	0.89	22.887*
		II1	0.83	--*

TL	Idealized influence	II2	0.81	19.377*
		II3	0.82	19.422*
		II4	0.88	21.824*
		II5	0.83	26.495*
	Inspirational motivation	IM1	0.88	--*
		IM2	0.91	26.628*
		IM3	0.84	23.104*
		IM4	0.79	20.786*
		IM5	0.82	21.798*
	Intellectual stimulation	IS1	0.87	--*
		IS2	0.84	22.518*
		IS3	0.89	24.926*
		IS4	0.89	25.350*
	Individualized consideration	IC1	0.86	--*
		IC2	0.90	25.052*
		IC3	0.86	23.135*
		IC4	0.87	23.478*
		IC5	0.83	21.804*
Interpersonal trust		IT1	0.67	14.230*
		IT2	0.71	15.203*
		IT3	0.68	14.450*
		IT4	0.82	18.275*
		IT6	0.80	--*
		IT8	0.75	16.260*

	IT11	0.73	15.717*
Knowledge sharing	KS1	0.78	19.382*
	KS2	0.84	21.910*
	IS3	0.75	18.412*
	KS5	0.80	20.348*
	KS6	0.85	22.683*
	KS7	0.76	18.561*
	KS8	0.86	--*

* $P < 0.001$

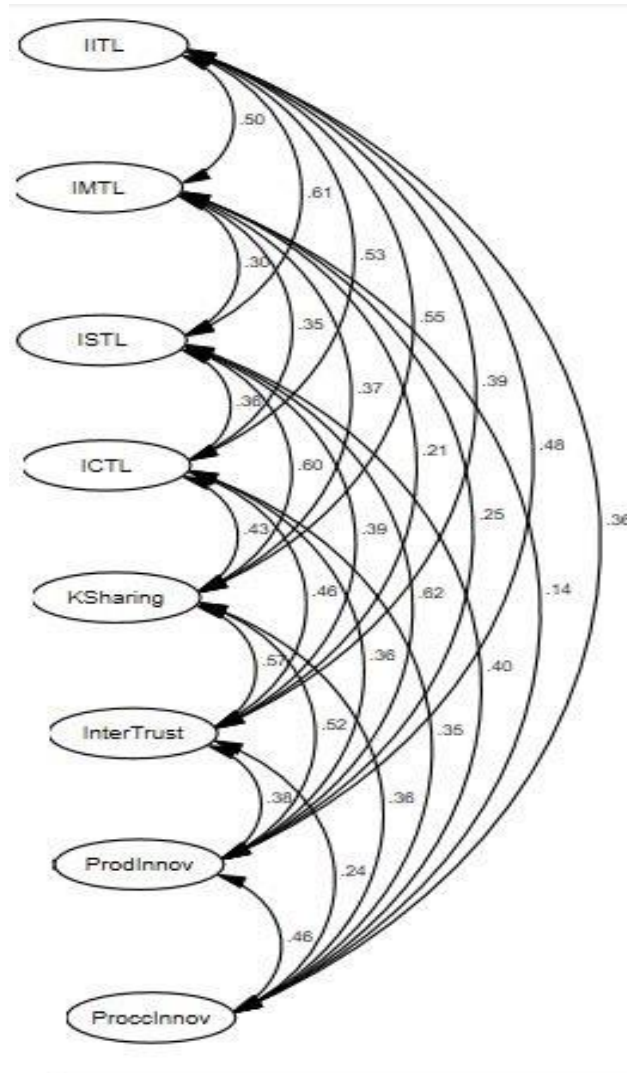


Figure 6.2 Revised first-order measurement model.

6.4.5 Revised second-order measurement model.

The model depicted in Figure (6.3) provides the second-order measurement model. The model exhibited acceptable fit for most of the indices. Therefore, any more revisions to the model were not considered to add any improvement. The fit indices were as follows: χ^2 (1542.130), df (842), CFI (0.952), TLI (0.949), RMSEA (0.045). Table (6.5) gathers FL for the final second-order measurement model. See appendix (6) for original Amos generated output.

Table 6.5 FL coefficients for final second-order measurement model.

Construct	Dimension	Item	Standardized coefficient for FL	t-value
Innovation	Product	Prod1	0.67	--*
		Prod2	0.92	16.395*
		Prod3	0.84	15.251*
		Prod5	0.88	15.829*
		Prod6	0.86	15.644*
		Prod7	0.85	15.463*
	Process	Proc1	0.85	--*
		Proc2	0.73	16.843*
		Proc3	0.87	21.914*
		Proc5	0.89	22.849*
		II1	0.83	--*
		II2	0.81	19.360*

TL	Idealized influence	II3	0.82	19.439*
		II4	0.88	21.834*
		II5	0.83	26.498*
	Inspirational motivation	IM1	0.88	--*
		IM2	0.91	26.555*
		IM3	0.84	23.054*
		IM4	0.79	20.746*
		IM5	0.82	21.809*
	Intellectual stimulation	IS1	0.87	--*
		IS2	0.84	22.460*
		IS3	0.89	24.964*
		IS4	0.89	25.324*
	Individualized consideration	IC1	0.86	--*
		IC2	0.90	25.067*
		IC3	0.86	23.186*
		IC4	0.87	23.422*
		IC5	0.83	21.896*
Interpersonal trust		IT1	0.67	14.212*
		IT2	0.71	15.162*
		IT3	0.68	14.403*
		IT4	0.82	18.267*
		IT6	0.80	--*
		IT8	0.75	16.285*
		IT11	0.73	15.691*

Knowledge sharing	KS1	0.78	19.296*
	KS2	0.84	21.834*
	KS3	0.76	18.450*
	KS5	0.80	20.334*
	KS6	0.86	22.736*
	KS7	0.76	18.635*
	KS8	0.86	--*

* $P < 0.001$

In the second-order measurement model, TL and Innovation components (dimensions) were found to be significantly correlated to its latent construct. All correlations were significant as ($P < 0.001$) and t values were greater than (1.96), supporting the operationalization of the study variables, for TL components: II ($Y = 0.75$), IM ($Y = 0.42$), IS ($Y = 0.84$), and IC ($Y = 0.67$), and for Innovation components: Product ($Y = 0.80$) and Process ($Y = 0.58$).

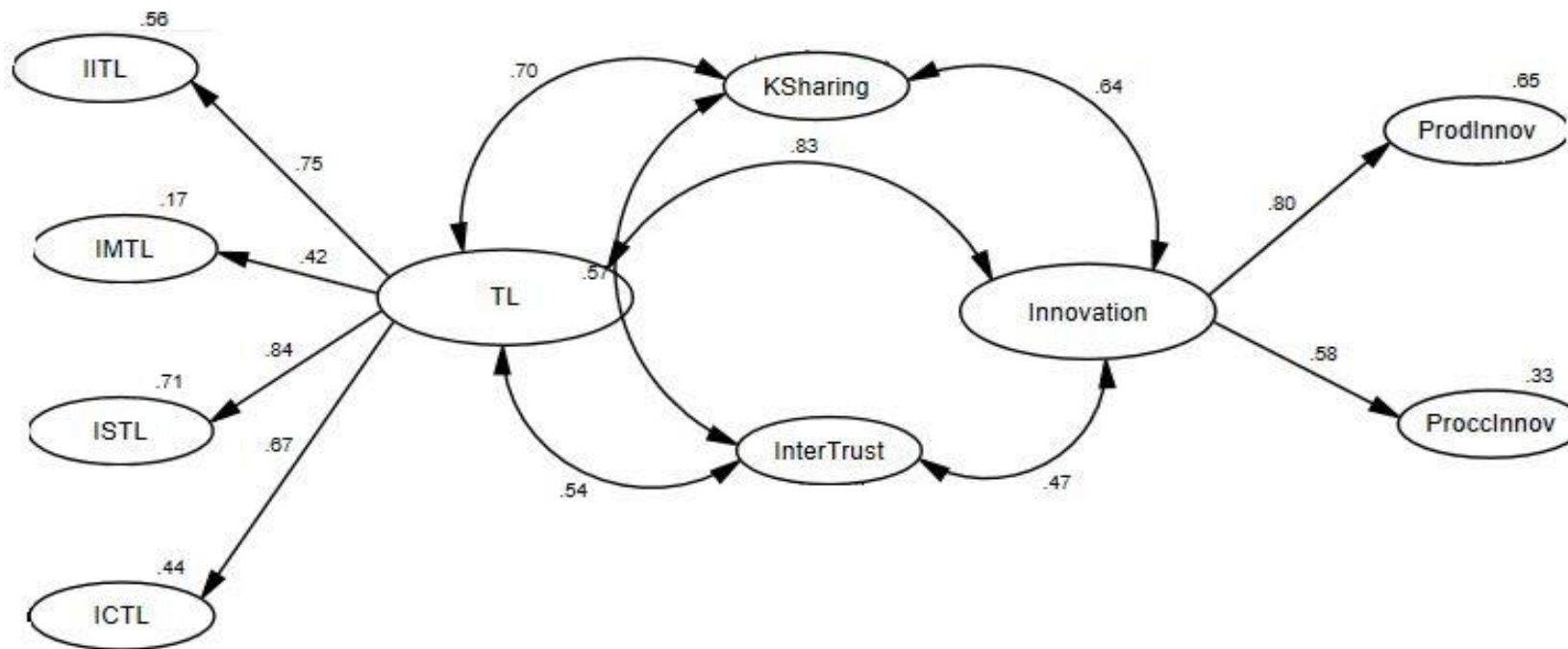


Figure 6.3 Revised second-order measurement model

CFA procedures were completed for the first and second-order models, and the validated measurement model was identified. A summary of goodness-of-fit indices for original and revised models is displayed in Table (6.6).

Table 6.6 A summary for goodness-of-fit indices for original and revised measurement models.

Indices	Cutoff Criteria	Original Estimate	Revised First-order	Revised Second-order
CMIN	--	3305.246	1497.424	1542.130
DF	--	1196	828	842
CMIN/ DF	>1 - <3	2.764	1.808	1.832
CFI	>0.95	0.885	0.954	0.952
TLI	>0.95	0.877	0.950	0.949
RMSEA	<0.05	0.065	0.044	0.045

The verified measurement model was validated, and the results are described in detail in the following sections.

6.4.6 Validity and reliability of the measurement model

The following three procedures were used to validate the suggested measurement theory (Bagozzi, 1980; Hair et al., 2019; Sekaran & Bougie, 2019):

6.4.6.1 Content validity

Content validity [face validity] examines if the content of a group of items is in line with what they are supposed to measure. This phase heavily relies on the researcher's judgement. In order to verify the scaled used for face validity, the researcher approached academic experts with extensive experience in the development of instruments for measuring TL and innovation performance (Sekaran & Bougie, 2019). Further information regarding content validity is provided in the methodology chapter.

6.4.6.2 Construct validity

Construct validity measures are analysed using statistical techniques to see if they can accurately reflect a high score on the scale used to represent the theoretical concept (Hair et al., 2019; Sekaran & Bougie, 2019). Examining uni-dimensionality, reliability, and validity (convergent and discriminant validity) is necessary for determining construct validity.

6.4.6.3 Uni-dimensionality:

According to Bagozzi (1980), establishing a model comprising all indicators related to only one construct is a test of uni-dimensionality, which should not happen for multi-dimensional variables. A pooled measurement model was designed suggesting unidimensional instrument, where the model reported misfit as fit indices scored: χ^2 (9101.171), df (860), CFI (0.435), TLI (0.407), RMSEA (0.152). Evidently, we can conclude that the measurement model is rather multidimensional, indeed, this provides a good indication that accounting for majority of variance in data cannot be accounted by a single factor model. See Table (6.7) for the goodness-of-fit indices for unidimensional model.

Table 6.7 Goodness-of-fit Indices for unidimensional model.

Indices	Cutoff Criteria	Unidimensional model
CMIN	--	9101.171
DF	--	860
CMIN/ DF	>1 - <3	10.583
CFI	>0.95	0.435
TLI	>0.95	0.407
RMSEA	<0.05	0.152

6.4.6.4 Reliability:

Reliability is the extent to which the measures are able to provide consistent results if reused in similar conditions. In fact, reliability examines the internal consistency of constructs (Hair et al., 2019; Sekaran & Bougie, 2019). Statistical reliability for validated scales was satisfied through Cronbach alpha and Composite Reliability [CR]. Cronbach alpha examines reliability by comparing the amount of shared covariance between a set of items that make up a scale (Hair et al., 2019; Sekaran & Bougie, 2019). The algebraic definition for the Cronbach alpha is displayed below:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

CR is a measure for scale items' internal consistency. High values for CR entails that the construct is reliable when measuring a specified concept (Raykov, 1997; Hair et al., 2019; Sekaran & Bougie, 2019). The algebraic definition for CR is displayed below:

$$CR_i = \frac{(\sum_{i=1}^k \lambda_i)^2}{(\sum_{i=1}^k \lambda_i)^2 + \sum_{i=1}^k e_i}$$

For both Cronbach alpha and CR, the minimum acceptable threshold is 0.70. Both Cronbach alpha and CR values were all greater than the acceptable level (0.70), showing that the reliability of scales was acceptable. See Table (6.8) for reliability assessments.

- *Cronbach alpha* values scored: Product (0.933), Process (0.898), Idealized influence (0.924), Inspirational motivation (0.927), Intellectual stimulation (0.927), Individualized consideration (0.936), Interpersonal trust (0.894) and Knowledge sharing (0.929).
- *CR* values scored: Product (0.934), Process (0.901), Idealized influence (0.919), Inspirational motivation (0.928), Intellectual stimulation (0.928), Individualized consideration (0.936), Interpersonal trust (0.893) and Knowledge sharing (0.929).

Table 6.8 Cronbach alpha and CR values for revised scales (N = 418).

Factor	N	Cronbach alpha	CR
Product	6	0.933	0.934
Process	4	0.898	0.901
Idealized influence	5	0.924	0.919
Inspirational motivation	5	0.927	0.928
Intellectual stimulation	4	0.927	0.928
Individualized consideration	5	0.936	0.936
Interpersonal trust	7	0.894	0.893
Knowledge sharing	7	0.929	0.929

6.4.6.5 Statistical validity

Statistical validity comprises examining both convergent and discriminant validity.

- **Convergent validity** refers to the new scale's relationship to other variables and existing measures of the same concept. The construct should not only be correlated with comparable, related factors, but also with different, unrelated ones (Hair et al., 2019). As mentioned earlier, CR provided a contribution for convergent validity as all scales scored acceptable levels of CR. All CR values were greater than 0.70.

Furthermore, the FL of statements also supported the convergent validity of the model. All statements had a significant FL on their respective latent constructs, as FL for all retained statements was above the minimum acceptable level (0.50) and most of the statements' FL were above (0.70) with significance values at ($P < 0.001$). Moreover, Average Variance Extracted (AVE) examines the average of R^2 for items within a construct and was also gathered using the following algebraic definition:

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}$$

AVE values were greater than the minimum acceptable level (0.50) for all constructs, showing further support for the convergent validity of the model. These findings were in line with suggestions made by Fornell and Larcker (1981) and Hair et al. (2019). AVE values scored: Product (0.704), Process (0.696), Idealized influence (0.696), Inspirational motivation (0.720), Intellectual stimulation (0.762), Individualized consideration (0.746), Interpersonal trust (0.546) and Knowledge sharing (0.651). See Table (6.9) for the convergent validity results.

Table 6.9 Convergent validity results for revised scales (N = 418).

Construct	Dimension	Item	FL	t-value	AVE
Innovation	Product	Prod1	0.67	--*	0.704
		Prod2	0.92	16.475*	
		Prod3	0.84	15.292*	
		Prod5	0.88	15.916*	
		Prod6	0.86	15.701*	
		Prod7	0.85	15.537*	
	Process	Proc1	0.85	--*	0.696
		Proc2	0.72	16.793*	
		Proc3	0.87	21.944*	
		Proc5	0.89	22.887*	
TL	Idealized influence	II1	0.83	--*	0.696
		II2	0.81	19.377*	
		II3	0.82	19.422*	
		II4	0.88	21.824*	
		II5	0.86	26.495*	
	Inspirational motivation	IM1	0.88	--*	0.720
		IM2	0.91	26.628*	
		IM3	0.84	23.104*	
		IM4	0.79	20.786*	
		IM5	0.82	21.798*	
		IS1	0.87	--*	0.762
		IS2	0.84	22.518*	

	Intellectual stimulation	IS3	0.89	24.926*	
		IS4	0.89	25.350*	
	Individualized consideration	IC1	0.86	--*	0.746
		IC2	0.90	25.052*	
		IC3	0.86	23.135*	
		IC4	0.87	23.478*	
		IC5	0.83	21.804*	
Interpersonal trust		IT1	0.67	14.230*	0.546
		IT2	0.71	15.203*	
		IT3	0.68	14.450*	
		IT4	0.82	18.275*	
		IT6	0.80	--*	
		IT8	0.75	16.260*	
		IT11	0.73	15.747*	
Knowledge sharing		KS1	0.78	19.382*	0.651
		KS2	0.84	21.910*	
		IS3	0.75	18.412*	
		KS5	0.80	20.348*	
		KS6	0.85	22.683*	
		KS7	0.76	18.561*	
		KS8	0.86	--*	

* $P < 0.001$

- **Discriminant validity** examines whether each variable is distinct from other variables in the model (Hair et al., 2019). Many approaches are available to satisfy discriminant validity. The approach proposed by Fornell and Larcker (1981) satisfied discriminant validity if the square root for AVE values was greater than the inter-construct correlations with the remaining constructs in the model. Discriminant validity was satisfied through this criterion as the square root for AVE shown in the diagonal exceeded their correlations of each variable with other variables. The results are displayed in Table (6.10).

Table 6.10 Discriminant validity through Fornell-Larcker for measurement model (N = 418).

	1	2	3	4	5	6	7	8
Product	0.839							
Process	0.463***	0.835						
Idealized influence	0.477***	0.360***	0.834					
Inspirational motivation	0.246***	0.138**	0.504***	0.849				
Intellectual stimulation	0.623***	0.395***	0.612***	0.298***	0.873			
Individualized consideration	0.364***	0.350***	0.529***	0.354***	0.358***	0.864		
Interpersonal trust	0.385***	0.244***	0.394***	0.212***	0.392***	0.465***	0.739	
Knowledge sharing	0.522***	0.358***	0.547***	0.370***	0.595***	0.432***	0.572***	0.807

* $p < 0.050$

** $p < 0.010$

*** $p < 0.001$

To provide further support for the discriminant validity of the model, a verified scale was used to test many nested models merging factors together against our verified basic model. This technique is based on model fit comparison. According to Schreiber (2017) as well as Rönkkö and Cho (2022), the general idea behind this technique is that if both models are proposed and nested, they fit well with the data, thus making discriminant validity problems plausible, otherwise no problem can be reported in the model.

Table (6.11) gathers together fit indices values for the three nested models. It was found that all models scored poor fit with the data. Hence, one can conclude that our proposed model fit better with the data than all tested nested models. These findings support the distinctiveness of our model, contributing to discriminant validity.

Table 6.11 Goodness-of-fit indices for alternative models to test study variables.

Indices	Cutoff Criteria	Basic verified model	Model 1	Model 2	Model 3	Model 4
CMIN	--	1497.424	9101.17 1	4848.98 1	6977.80 8	7183.33 9
DF	--	828	860	850	857	857
CMIN/ DF	>1 - <3	1.808	10.583	5.705	8.142	8.382
CFI	>0.95	0.954	0.435	0.726	0.580	0.566
TLI	>0.95	0.950	0.407	0.709	0.558	0.543
RMSEA	<0.05	0.044	0.152	0.106	0.131	0.133

- Model 1: Single factor model included all items in one factor
- Model 2: All factors as its, Interpersonal trust & Knowledge sharing were combined together.
- Model 3: All factors as its, Interpersonal trust & Knowledge sharing TL components were combined together.
- Model 4: All factors as its, Process and Product & TL components were combined together.

6.4.6.6 Nomological validity:

The final step in examining validity is to examine the predictability of the proposed constructs. This validity can be seen as the initial testing of the proposed hypotheses by examining correlations (Bagozzi, 1980; O'Leary-Kelly & Vokurka, 1998). Table (6.13) presents the covariances estimation, which were all found to be significant. Furthermore, construct correlations in Table (6.12) were all found to be positive, providing initial support for the prediction manner between the proposed constructs.

Table 6.12 Constructs correlations.

Constructs			Estimate
Innovation	<-->	TL	0.832
InterTrust	<-->	TL	0.539
KSharing	<-->	TL	0.698
InterTrust	<-->	KSharing	0.572
KSharing	<-->	Innovation	0.643
InterTrust	<-->	Innovation	0.467

Table 6.13 Constructs covariances.

Constructs			Estimate	S.E.	C.R.	P
Innovation	<-->	TL	0.243	0.035	7.014	0.001
InterTrust	<-->	TL	0.248	0.034	7.346	0.001
KSharing	<-->	TL	0.344	0.040	8.654	0.001
InterTrust	<-->	KSharing	0.355	0.041	8.689	0.001
KSharing	<-->	Innovation	0.253	0.036	7.010	0.001
InterTrust	<-->	Innovation	0.172	0.030	5.772	0.001

To summarise, the revised model demonstrated a strong fit, high statistical reliability, and convergent validity. Our measuring model therefore has favourable psychometric characteristics. Thus, we proceeded with the structural model.

6.5 Structural model testing using path analysis (Hypotheses testing)

Following the measurement model tests, structural model was examined to evaluate the associations between model variables by employing path analysis. Path analysis is a multivariate approach that is basically grounded to the linear equation system to evaluate effects between model variables (Byrne, 2016; Hair et al., 2019).

To test the mediation influence, we adopted the following series in hypotheses testing; firstly, the causal variable (TL) should be significantly related to the outcome variable (Process/ product) without having the mediator in the model. Secondly, the causal variable should be correlated with the mediator variable. Thirdly, the mediator variable must exercise an influence on the outcome variable. Finally, the mediation exists if the indirect effect was significant, a full mediation occurs when an indirect effect exists, and a direct effect doesn't exist. Meanwhile, partial mediation exists when we have both direct and indirect effects significant at the same direction.

Findings are displayed in detail using path analysis, interpreting results included examining the following in line with guidelines by (Hair et al., 2019):

1. Coefficient of determination (R^2): related to the model predictivity power.
2. Path coefficient (β): related to the amount of change in the dependent variable for every 1% change in the predictor variable.

3. Probability level at threshold (0.05): if P value is below (0.05) the null hypothesis is rejected, meanwhile, if P value is greater than (0.05) the null hypothesis is supported.

6.5.1 Testing direct relationships

Structural model was tested as displayed in Figure (6.4). The model fits well with the data: χ^2 (1500.503), df (836), CFI (0.954), TLI (0.951), RMSEA (0.044). Predictivity power of the model was seen marginally increasing. R^2 explained in product recorded 49% and recorded 27% in process. Further, TL explained $R^2 = 51\%$ of the variance in knowledge sharing and explained 30% of the variance in interpersonal trust, evidently showing the vital role of TL in explaining many outcomes in the firm.

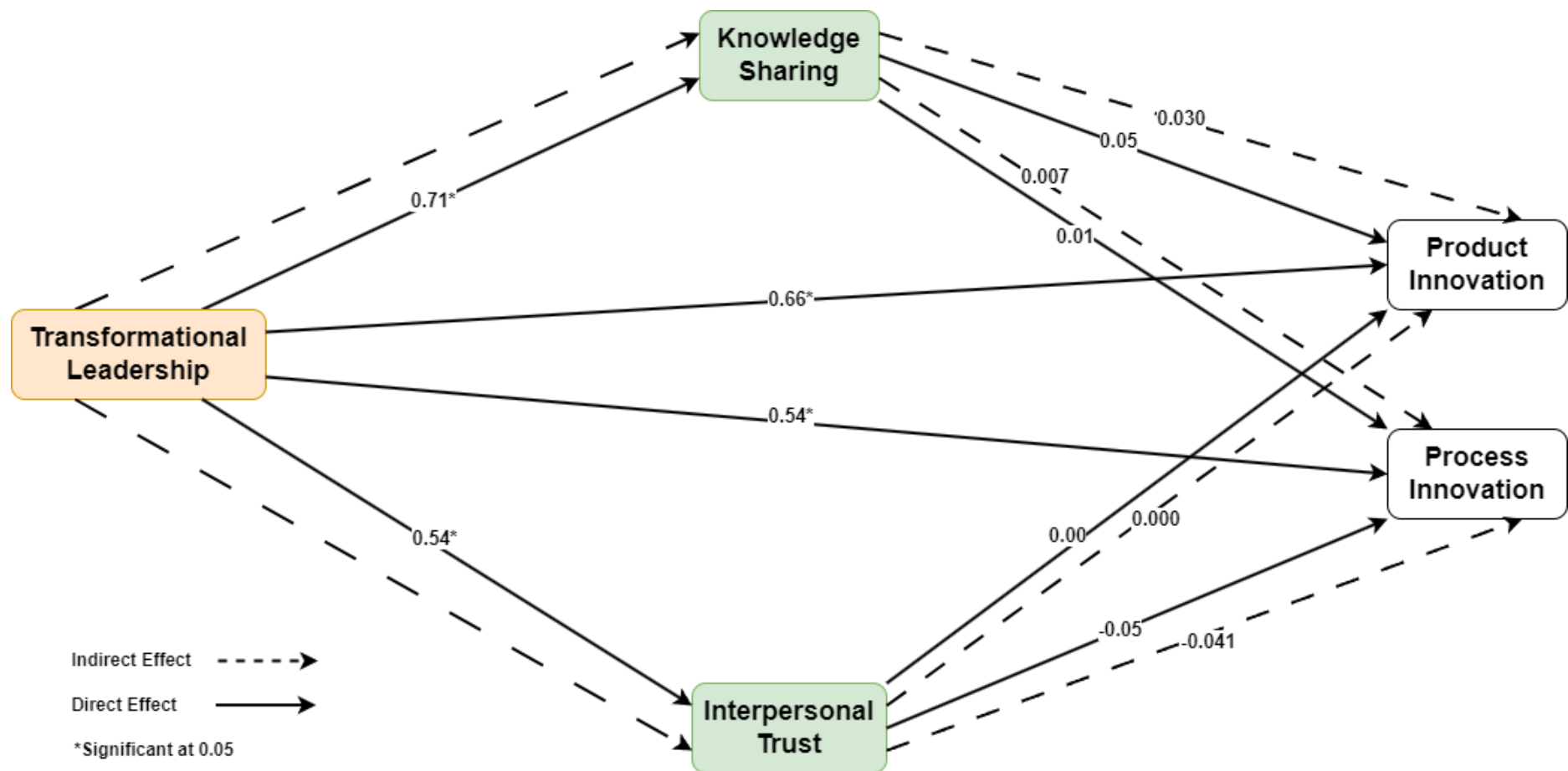


Figure 4 Hypothesis Testing

Results of the direct influence were as follows:

1. Path coefficient scored ($\beta = 0.66$, $P < 0.001$) for product, entailing that for each 1% increase in TL, product innovation increases by 66%, findings support H1. Further, Path coefficient scored ($\beta = 0.31$, $P < 0.001$) for process, entailing that for each 1% increase in TL, process innovation increases by 31%, findings also support H2.
2. Path estimates reported that TL was significantly and positively associated with knowledge sharing and interpersonal trust, path coefficient scored ($\beta = 0.71$, $P < 0.001$) for knowledge sharing and scored ($\beta = 0.54$, $P < 0.001$) for interpersonal trust. Findings support both H3 and H4. Results also support that the second condition for mediation is exist.
3. Knowledge sharing was seen non-significantly associated with product innovation and with process innovation as path coefficients scored respectively ($\beta = 0.05$, $P = 0.532$) and ($\beta = 0.01$, $P = 0.930$), findings render no support for H5 and H6 and accordingly the third step of mediation was not satisfied for knowledge sharing.
4. Concerning the association between interpersonal trust and product/ process innovation, path coefficients were non-significant, path coefficient scored ($\beta = 0.00$, $P = 0.998$) for product innovation and scored for process innovation ($\beta = -0.05$, $P = 0.404$), results render no support for H7 and H8. Table (6.14) provides a summary for testing structural model introducing mediators.

Table 6.14 Summary for testing structural model introducing direct influences

Path	Standardized coefficient	T-value	P-value	R-squared
TL → Product	0.612	7.149	***	49%
TL → Process	0.753	5.927	***	27%
TL → KSharing	0.714	11.264	***	51%
TL → Interpersonal trust	0.545	8.666	***	30%
KSharing → Product	0.046	0.625	0.532	49%
KSharing → Process	0.007	0.087	0.930	27%
Interpersonal trust → Product	0.000	0.003	0.998	49%
Interpersonal trust → Process	-0.054	-0.835	0.404	27%

6.5.2 Testing indirect relationships

The third condition for mediation which is the mediator should significantly influence the dependent variable was not satisfied, entailing that mediation role for interpersonal trust and knowledge sharing cannot be established rendering no support for mediation hypotheses. Specific indirect effect was estimated through estimands. Moreover, bootstrap was applied to test for the significant levels of the indirect effect, samples for bootstrap was set to 2000 samples with a confidence level 0.95, an indirect effect is considered significant when the null hypothesis (zero) is outside the Confidence Interval (CI) (Lei & Wu, 2007; Hair et al., 2019), results for indirect effects were as follows:

1. The indirect effect for TL on product innovation through knowledge sharing scored a very low coefficient (0.030) with lower bound (-0.130) and upper bound (0.130) and ($P= 0.651$) showing a non-significant indirect effect. Hence, H9 is not supported.
2. The indirect effect for TL on process innovation through knowledge sharing scored a very low coefficient (0.007) with lower bound (-0.244) and upper bound (0.193) and ($P= 0.959$) showing a non-significant indirect effect. Hence, H10 is not supported.
3. The indirect effect for TL on process innovation through interpersonal trust scored a very low coefficient (0.000) with lower bound (-0.067) and upper bound (0.059) and ($P= 0.986$) showing a non-significant indirect effect. Hence, H11 is not supported.
4. Finally, the indirect effect for TL on process innovation through interpersonal trust scored a very low coefficient (-0.041) with lower bound (-0.175) and upper bound (0.070) and ($P= 0.442$) showing a non-significant indirect effect. Hence, H12 is not supported. Below Table (6.15) displays a summary for results of indirect relationship estimates, meanwhile, Table (6.16) gives a summary for path estimates and hypotheses decision. See Appendix (6) for all AMOS results.

Table 6.15 Summary for results of indirect relationship testing

Path	Indirect estimate	Lower bound	Upper bound	Significance
TL→ Knowledge sharing →Product innovation	0.030	-0.130	0.130	0.651
TL→ Knowledge sharing →Process innovation	0.007	-0.244	0.193	0.959
TL→ Interpersonal trust →Product innovation	0.000	-0.067	0.059	0.986
TL→ Interpersonal trust →Process innovation	-0.041	-0.175	0.070	0.442

Table 6.16 Path estimates and hypotheses decision for mediation model

Path		β	Decision
H1	TL→Product innovation	0.664*	Supported
H2	TL→Process innovation	0.540*	Supported
H3	TL→ Knowledge sharing	0.714*	Supported
H4	TL→ Interpersonal trust	0.545*	Supported
H5	Knowledge sharing →Product innovation	0.046	Not supported
H6	Knowledge sharing →Process innovation	0.007	Not supported
H7	Interpersonal trust →Product innovation	0.000	Not supported
H8	Interpersonal trust →Process innovation	-0.054	Not supported
H9	TL→ Knowledge sharing →Product innovation	Indirect= 0.030	Not supported
H10	TL→ Knowledge sharing →Process innovation	Indirect= 0.007	Not supported
H11	TL→ Interpersonal trust →Product innovation	Indirect= 0.000	Not supported
H12	TL→ Interpersonal trust →Process innovation	Indirect= -0.041	Not supported

6.6 Summary

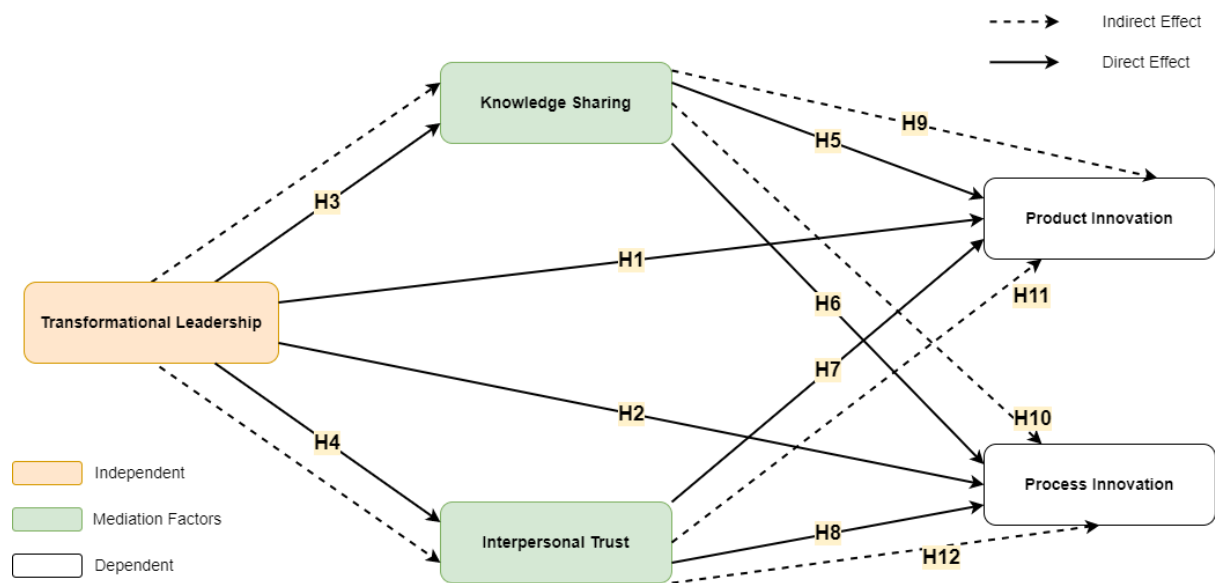
This chapter has provided empirical findings by testing the measurement model and the structural model. Our basic measurement model exhibited a poor fit, therefore, the model was revised with a few amendments. The revised model was seen to fit better with the data. Furthermore, the validity and reliability of the model were verified. Moving on to the structural model, interesting findings were gathered. The predictive power of the model was seen as satisfactory. TL was observed to explain 48% and 26% of the variation in product and process, respectively. Further, the direct effect of TL on product scored 66% and scored 31% on process. Evidently, these findings demonstrated the essential role of TL in shaping innovation capabilities.

In moving to structural model controlling for the effect of mediators, the predictive power of the model was observed to be marginally increasing. Moreover, TL was seen as explaining 51% and 30% of variation in knowledge sharing and interpersonal trust respectively, again contributing to the vital role taken by TL in explaining various outcomes for the firm. In establishing mediation conditions, TL significantly influenced knowledge sharing and interpersonal trust. However, interpersonal trust and knowledge sharing failed to significantly influence product and process innovation. Hence, the mediation role was not supported for both mediators. As a result, these findings contradicted our expectations. However, this provided us with critical practical implications that shall be discussed in the next chapter.

Chapter 7: Discussion of the findings

This chapter discusses the study findings in line with the current literature. This chapter is divided into seven sections: **Section One** discusses (the levels of transformational leadership, knowledge sharing, interpersonal trust, and innovation within the Jordanian banking sector as reported by respondents). **Section Two** (discuss the first objective of this study: to evaluate the impact of transformational leadership on product and process innovation in Jordan's banking sector). **Section Three** (discuss the second objective of this study: to evaluate the impact of Transformational leadership on Knowledge Sharing which further impacts on product and process innovation in the Jordanian banking sector). **Section Four** (discuss the third objective of this study: to evaluate the impact of Transformational Leadership on Interpersonal Trust which further impacts on product and process innovation in the Jordanian banking sector). **Section Five** (discuss the fourth objective of the study: to examine the mediation impact of knowledge sharing and interpersonal trust on the transformational leadership-innovation relationship in the Jordanian banking sector).

Before starting the discussion, it is important to revisit the conceptual model **Error! Reference source not found.**, that was developed based on the prior literature review and look at the impact of transformational leadership on innovation through integrating knowledge sharing and interpersonal trust as a mediator factor within the Jordanian banking sector. The model was analysed and tested using exploratory and confirmatory factor analyses and SEM through AMOS.23.



7.1 Levels of TL, Knowledge Sharing, Interpersonal Trust and Innovation within the Jordanian banking sector as reported by respondents:

The descriptive analysis of the questionnaire provided clear insights into the variables examined in the banking sector in Jordan. This analysis was useful in understanding the complex relationship between different tested variables surrounding TL. The descriptive analysis demonstrated that the overall level of TL practise was moderate (Mean = 3.07), showing levels of practise that are suitable for TL (Table 5.9).

These variables and their relationship with TL point towards adopting TL for effective leadership in the Jordanian banking industry. However, these variables should not be treated as perfect indicators for achieving innovation. Since the economy in developing countries is always in flux, leaders are advised to continue to develop their TL procedures to meet changing circumstances. These variables and their relationships can be treated as a working guideline to design and develop further practices.

Two factors (inspirational motivation and individualised consideration) had the lowest mean value in this study. Inspirational motivation scored (Mean = 2.55) and individualised consideration scored (Mean = 2.92). Moreover, since these factors are also known to play a critical role in empowering employee performance and attitudes at work, leaders may contemplate concentrating more on using inspirational motivation and individualised consideration. These factors can be highly contextual and scenario-based (in the Jordanian banking sector) in terms of levels of TL, as no literature or earlier empirical studies could be found that examined levels of TL in the banking industry.

Innovation performance levels were strong, and both product and process levels were high (Mean = 3.82). (See Table 5.11), indicating a positive impact on these two factors (product and process) on the Jordanian banking industry. Leaders in this sector should consider continuing to work to maintain such high levels of inventive performance in their organizations. However, it is crucial to consider the fact that many components of both product and process innovation were dropped throughout the CFA phase, demonstrating that the growth in product and process innovation is not yet entirely optimised. As a result, leaders may seek out flaws in innovation performance that will lead to necessary corrective actions in their respective organizations.

As observed in literature, the banking sector has been undergoing a major shift owing to economic changes, globalization, and technological advancements and is continuously moving towards adopting the modern period that began in banking business life and continues (George & Zakkariya, 2018).

The findings in this study are consistent with the results of the demonstrated modern period that began in banking business life as a result of economic changes, globalization, and technology.

The banking industry has to embrace changes to maintain a feasible existence through ceaseless learning capacity for all employees while evolving in structure (i.e., virtual or boundless organisational structure) to be a learning organisation. A learning organisational culture should be fulfilled if innovative organisational culture is created within the scope of its vital distention in conjunction with otherworldly and work difference convections.

As the source of innovation is people, most banking industries lead their employees towards entrepreneurship while they utilise modern contemplations and empower employees to produce modern thoughts.

Regarding levels of knowledge sharing and interpersonal trust in the banking sector in Jordan, results reported moderate levels. Knowledge sharing (Mean = 3.34) and interpersonal trust (Mean = 3.29), showing a modest indicator regarding innovative performance antecedents (See Table 5.13). Thus, this requires the attention of managers and leaders to improve and foster various factors in their firms to attain higher levels of interpersonal trust and knowledge sharing. Findings are in line with results by (Wu et al., 2009) who reported the levels of interpersonal trust/ knowledge sharing in Taiwanese high-tech industries.

7.2 Discussion of Objective One: To evaluate the impact of Transformational leadership on product and process innovation in Jordan's banking sector.

In this part, the impact of TL on product and process innovation within the Jordanian banking sector is discussed. Additionally, this part answers the first question: "What is the effect of TL on product and process innovation within the Jordanian banking sector?"

The results of SEM support the hypothesised relations (H1: TL positively influences product innovation. H2: TL positively influences process innovation), as discussed below:

The results reveal that TL has a positive impact on product and process innovation. The path coefficient scored ($\beta = 0.69$, $P < 0.001$) for product innovation and scored ($\beta = 0.51$, $P < 0.001$) for process innovation. The findings of this study suggest that TL practises have a positive "moderate" (Mean= 3.07) direct influence on product/ process innovation

within the banking sector in Jordan. In this sense, the significant direct influence of TL on product and process innovation provides validated proof for expanding the body of literature that links TL practises to innovation. It also recognises that employing suitable TL practises is an efficient and effective driver for employees' innovation, which is expected to subsequently help banks achieve other favourable outcomes.

Additionally, the structural model linking TL to product and process innovation found that TL explained acceptable levels of variation in product and process innovation. In product innovation $R^2 = 48\%$ of the variation in product and explained $R^2 = 26\%$ of the variation in process innovation. This research agrees with previous research that transformational leadership has a positive impact on innovation. Moreover, upon testing the product innovation and process innovation, this research revealed that process and product innovation are positively related to transformational leadership.

The results are in line with the body of research, which underlines for managers that it may be enabled by leading practises in any workplace. TL can promote and challenge people to innovate and enhance current goods, processes, and organisational structures. Transformational leadership can increase employees' desire to take on more responsibility in organisations.

Despite the fact that all dimensions of TL are high, inspirational motivation is the lowest (Mean= 2.55) when compared to intellectual stimulation (Mean= 3.68). This indicates that the employees are more challenged by their leaders when compared to their approach to the organization's mission and objectives. This indicates that employees are seeing the leaders as more influential when compared to other factors. This could be related to the structure of the banking industry in Jordan and the impact of competition between branches of the banks in different areas.

The result of this study is in line with the previous literature. For example, Rasheed et al. (2021) illustrated that there is a positive relationship between transformational leadership and product and process innovation within Pakistani SMEs. Moreover, they argued that transformational leadership is key to shaping employee voice and process and product innovation.

Le and Lei (2019) illustrated that TL plays a critical role in encouraging innovation by creating an atmosphere that encourages the development of skills and practises that improve innovation in China. Moreover, Prasad and Junni (2016) justified the positive impact of TL on innovation in the USA. They argued that transformational leaders encourage the development of workers' capacities and provide them with learning opportunities, which are the primary sources of developing employees' creative thinking. Also, Prasad and Junni (2016) explained that TL will be able to convince and encourage people about the need for change and innovation by motivating the organisation's employees. In line with the existing research mentioned above, the current study indicates that transformational leaders attempt to offer a motivating shared vision and common objectives for the future of their organisations.

In their research, Trung et al. (2014) demonstrated that there is a positive relationship between transformational leadership and innovation in Vietnamese firms. They have argued that employees have the required motivation and encouragement to discuss and try innovative ideas. Likewise, Garcí'a-Morales et al. (2012) argued that the TL's behaviour in Spanish firms shapes innovation capacity either directly or indirectly by improving the firm's learning capabilities.

Gumusluoğlu and Ilsev (2009) found that transformational leadership has a beneficial influence on organisational innovation within the Turkish context; they have argued that

TL is a key factor in organisational innovation. They recommended managers to participate in transformational leadership behaviours to foster organisational innovation.

In the Arab context, researchers found a positive relationship between TL and innovation. For example, Al-Husseini et al. (2019) illustrated that there is a positive effect of transformational leadership on product and process innovation within Iraqi higher education institutions. Furthermore, by practising idealised influence, the faculty becomes more innovative. Also, leaders with idealised influence allow cultural values to evolve, resulting in better product and process innovation (Vaccaro et al., 2012). Moreover, by practising inspirational motivation, leaders promote organisational development and help to create a vision that allows their organisation to be innovative (Bass & Riggio, 2012). Practicing intellectual stimulation is fundamental for innovation, especially for product and process innovation. Finally, by practising individualised consideration, leaders can enhance the source of knowledge, which can improve problem solving. Additionally, Al Ahmad et al. (2019) discussed the important role of transformational leadership in enhancing innovation in the Lebanese banking sector. Their main implication was that individualised consideration is the crucial predictor of product and process innovation.

Despite earlier listed studies that examined the influence of TL on product/ process innovation, few studies have been provided from developing country context like Jordan; hence, this study provided an attempt to redress such an imbalance. Moreover, most banking studies focused on securing and re-establishing financial issues and other problem-solving issues; whereas planning representatives construct their capacities to achieve superior perform. In contrast to previous research, the current study focuses on a leadership style with social issues at the centre aimed at employee motivation through building personal trust, forming working groups in such a way that encourages knowledge acquisition and sharing.

7.3 Discussion of Objective two: To evaluate the impact of Transformational leadership on Knowledge Sharing which further impacts on product and process innovation in the Jordanian banking sector.

This part of discussion is divided into two sections, the first section address the direct effect of transformational leadership on knowledge sharing. The second section address the impact of knowledge sharing on product and process innovation within the Jordanian banking sector.

Section one:

This section addresses the direct effects of TL on knowledge sharing within the Jordanian banking sector, which represents the study's second objective. Additionally, this part responds to the study's second question: "What is the effect of TL on KS within the Jordanian banking sector?"

The results of the SEM supported the hypothesised relation between TL and KS (H3: TL positively influences knowledge sharing) within the Jordanian banking sector.

The result of this study reveals that applying transformational leadership within the Jordanian banking sector enhances knowledge sharing between managers and employees ($\beta = 0.71$, $P < 0.001$) this study is in line with previous literature. The positive relationship between TL and knowledge sharing among peers exists perhaps because this knowledge sharing provides the material and intellectual foundation for success and creates a suitable environment for employees to freely share their knowledge (Yadav et al., 2019). Moreover, the results of this study also indicate that implementing suitable TL will improve employee knowledge sharing, and transformational leadership is considered

one of the most crucial leadership philosophies that promote the facilitation of the process of knowledge sharing (Le et al., 2018). Results further show that TL plays a significant role in fostering knowledge sharing. It also shows the robustness of TL in divining many capabilities for firms. Additionally, the research suggests that transformational leaders may establish a work environment that encourages knowledge sharing by inspiring people, fostering respect and trust, establishing the procedures and structures necessary for knowledge sharing to begin within firms, and developing a shared vision (Salo, 2009; Shi, 2010, Al-Husseine et al., 2019). Transformational leaders consider their people as vital resources for their organisations and place a strong focus on the significance of emotion, values, and ethics. Therefore, employees voluntarily and actively share their intellectual capital with co-workers to improve the organisation (Le & Lei, 2019).

This study is in line with previous literature. For example, Yadav et al. (2019) found in their study a positive direct relationship between transformational leadership and knowledge sharing among freelancers in India. Furthermore, Transformational leaders encourage their team members and give them the material and intellectual foundation for success. The environment thus created within and among employees leads employees to freely share knowledge.

Moreover, Le & Lei (2019) found in their study in China that transformational leadership positively impacts knowledge sharing. Also, they found that the effect of knowledge sharing on process innovation is more significant than its influence on product innovation. Le et al. (2018) demonstrated that one of the most crucial leadership philosophies that promote the facilitation of the process of knowledge sharing in China is transformational leadership. Additionally, they pointed out that transformational leaders consider their people to be vital resources for their organisations and place a strong focus on the

significance of emotion, values, and ethics. Employees voluntarily and actively share their intellectual capital with co-workers to improve the organisation.

In Arab countries, Chaar and Easa (2020) illustrated the positive impact of transformational leadership on knowledge sharing during the COVID-19 era within the Lebanese banking sector. Furthermore, the research shows that creating a culture of knowledge sharing by leaders who practise transformational leadership has a significant and positive impact on the creation of new concepts, items, and procedures. To better optimise banking operations during the epidemic, leaders encourage knowledge sharing on enhancing and extending online and digital banking services.

Al-Husseini et al. (2019) clearly demonstrated the positive relationship between transformational leadership and knowledge sharing in the Iraqi context. Thus, leaders encourage their employees to share their expertise by sharing opinions and utilising peer support for the advancement of learning technologies and skill development. Their outcomes also show how leaders who foster respect and trust may encourage knowledge sharing and acquisition among team members. On the other hand, the results contracted with a study by Masa'deh et al. (2016), who found in their study conducted from the higher council of youth in Jordan that transactional leadership impacted knowledge sharing whereas transformational leadership did not have any significant impact.

Previous literature noted that one of the highest-ranking leadership styles has been identified as transformational leadership (Le & Lei, 2019). It refers to leaders who can inspire people to think outside the box to reach the needed goals and objectives by motivating them to attain innovation. Additionally, Le and Lei (2018) noted that one of the

most effective leadership styles for improving KS activities and developing a culture that supports open and honest communication among employees is transformational leadership. Moreover, Le et al. (2018) and Pee and Min (2017) argue that in the process of knowledge management, KS plays a critical role. Le and Lei (2017) noted that in most firms, knowledge and knowledge management capabilities are critical pillars of success. Le and Lei (2017) further stated that the success of knowledge management initiatives is determined by the effectiveness of knowledge sharing activities in an organisation.

Additionally, TL, according to Le and Lei (2017), has a significant impact on an organisation's knowledge capital and crucial outcomes. Thus, examining the influence of TL on specific forms of KS has important consequences for academics and practitioners who aim to have a better understanding of the circumstances to improve employees' KS behaviours at work. Han et al. (2016) argued that leadership is viewed as a critical component among the fundamental aspects of knowledge sharing, with a close relationship and decisive influence on knowledge sharing.

Section two:

This section addresses the direct effects of knowledge sharing on product and process innovation within the Jordanian banking sector. This part also responds to the third question of this study - "What is the effect of knowledge sharing on product and process innovation within the Jordanian banking sector?".

The results of the SEM did not support the hypothesised relationship between knowledge sharing and product and process innovation (H5: KS positively influences product innovation; H6: KS positively influences process innovation).

The result of the study indicates that the influence of knowledge sharing on both products and processes was not significant. For product innovation ($\beta = 0.046$) with P-value of (0.532) and for process innovation scored ($\beta = 0.007$) with a P-value of (0.930) providing an interesting finding for the Jordanian banking sector. The study's findings reveal that there is no significant relationship between knowledge sharing and product and process innovation and suggest that the interchange of knowledge is connected to feeling the risk of knowledge sharing between colleagues in a context involving different bank departments. Therefore, employees become cautious of providing advice and sharing knowledge, which eventually affects how they engage in an innovative manner at work (Usmanova et al., 2020).

Additionally, such findings also suggest a drawback in the Jordanian banking sector in aligning knowledge sharing capabilities to promote innovative performance. This should be considered by leaders and those in charge of the surveyed banks when handling such issues. This can be justified by the structure of the banking sector in Jordan and how it operated during COVID time. It is important to highlight that the branches of the banks in Jordan are competitive, and sharing knowledge is not expected, especially during the extreme circumstances of COVID and lockdown.

The result of this study is in line with previous literature; for example, Usmanova et al. (2020) illustrated in their study that there is a correlation between knowledge sharing and

innovative behaviour among Chinese multinational companies in Kazakhstan. Furthermore, knowledge workers benefit from the informational compensation of their peers and positive social perceptions, but they are also distracted and handicapped by misplacing their undivided informational gain (Kimmerle et al., 2011). Additionally, the flow of information is a delicate process that presents social issues to the actors, making it potentially unstable and unsafe (Connolly and Thorn, 1990). Thus, the study's findings that there is no significant correlation between knowledge sharing behaviour and innovative work behaviour suggest that the exchange of information is related to feeling the risk of knowledge sharing among colleagues in a context involving different nations. This feeling of risk causes workers to feel anxious about sharing information and offering advice and assistance, which ultimately has an impact on their innovative work behaviours.

Rhee and Choi (2017) conducted a study on different managers enrolled in an executive MBA program of a university in South Korea to explain how individuals deal with the mixed motivation caused by the inherent social dilemma of knowledge sharing. The result of their study fails to show any relationship between knowledge sharing and innovation (creative performance). Moreover, Kang and Lee (2017), in their study of a multinational electronic organisation headquartered in South Korea, found no relationship between knowledge sharing and innovative behaviour. They further argued that innovation, acceptance, and use of external knowledge are more important than sharing internal knowledge. Employees gain fresh perspectives from external knowledge, which inspires them to act creatively (Fosfuri and Tribó 2008). Internal knowledge exchanged amongst co-workers in the same department, such as R&D, may not, however, directly promote creativity.

Ling and Nasurdin's (2010) in their study of manufacturing firms in Malaysia found that both knowledge sharing and knowledge application had no relationship with innovation. Furthermore, they argued that they had such results due the fact that Malaysians are careful in sharing their knowledge because of their modesty and lack of confidence.

The act of sharing information, experience, and talent is at the heart of most innovation projects. An organisation's capacity to convert and apply knowledge can determine its level of innovation capabilities in both product and process innovation (Lee et al., 2013). Moreover, to improve collective learning and enhance the stock of knowledge accessible to the firm, knowledge sharing between organisational members plays a critical role. In this process, organisations capitalise on their information stock by transferring tacit knowledge into explicit knowledge through collecting and donating (Lin, 2007; Nonaka & Toyama, 2005).

Promoting the KS behaviours among the firm's employees allow them to gain new innovative ideas that lead to product and process innovation (Mehrabani & Shajari, 2012; Dougherty et al., 2012; Tsai, 2001). Additionally, employees may adapt and apply current knowledge in innovative ways through knowledge activities to modify and improve their duties, which, further, creates new knowledge that can be used for product and process innovation.

Wang and Wang (2012) stated that innovation projects rely heavily on workers' knowledge and expertise in the process of generating value as well as their capacity to convert and apply knowledge in the production of products and services. Consequently, the KS process aids innovation in teams, units, and the entire organisation. Furthermore, Le and Le (2021) demonstrated in their study of knowledge sharing behaviours and

established an important role of KS in improving organisational innovation performance. Similarly, Al-Husseini et al. (2021) confirmed the importance of knowledge sharing in promoting product and process innovation in Iraqi higher education.

Findings of this study do not underestimate the value of knowledge sharing in promoting innovative performance. The research finding of this study are contradicted with previous research, for example, Le and Le (2021) studied the Vietnamese firms, and their study findings reveal that KS play an important role in improving firm's innovation performance. Moreover, Al-Husseini et al. (2021) confirm the crucial role that KS plays in promoting product and process innovation within the Iraqi context. Le and lei (2018) investigated the Chinese firms and found that knowledge sharing is promoting product and process innovation. Finally, Zheng et al. (2017) in their study found a positive association between KS innovation in China.

7.4 Discussion of Objective Three: To evaluate the impact of Transformational Leadership on Interpersonal Trust which further impacts on product and process innovation in the Jordanian banking sector.

This part of discussion is divided into two sections, the first section addresses the direct effect of transformational leadership on Interpersonal Trust. The second section address the impact of interpersonal trust on product and process innovation within the Jordanian banking sector.

Section one:

This section addresses the direct effects of TL on interpersonal trust within the Jordanian banking sector, which represents the study's third objective which corresponds to the fourth question of the study: "What is the effect of TL on IT within the Jordanian banking sector?"

The results of the SEM supported the hypothesised relation between TL and IT (H4: TL positively influences interpersonal trust). within the Jordanian banking sector.

The result of this study indicates that applying transformational leadership within the Jordanian banking sector enhances interpersonal trust between leaders and employees ($\beta = 0.54$, $P < 0.001$). It demonstrates the power of TL in determining a variety of organisational skills. The findings of this study show that transformational leaders are key in fostering employee trust, which is seen as a critical component of generating competitive innovation (Le & Lei, 2018; Hui et al., 2018). Additionally, developing transformational leadership skills will increase interpersonal trust between employees and leaders, which will be reflected in achieving innovation (Zhu et al., 2013). The findings underline how crucial TL is in fostering interpersonal trust among organisations.

This study is in line with previous literature; for example, Le and Lei (2018) illustrated the importance role transformational leadership plays an important role in building up subordinates' trust in their leaders within Chinese firms, which is a crucial factor in achieving innovation.

Similarly, Hui et al. (2018) demonstrates the role of transformational leadership, interpersonal trust, and innovation capabilities within Vietnamese firms. The results of their study highlighted the need to practise transformational leadership to foster employee trust and, finally, to foster innovation. Their study shows the important role of

transformational leadership in enhancing employees' trust. Wang et al. (2016) also showed a positive and substantial association between transformational leaders and employee trust in the leader, and they defined trust as an indication of the strength of the relationship between leaders and employees.

Zhu et al. (2013) demonstrate in their study the significant relationship between transformational leadership and interpersonal trust in mainland China. Furthermore, the study results revealed that transformational leadership leads to higher interpersonal trust.

Findings of this research are in congruence with previous research that transformational leadership has positive impact on interpersonal trust. Results reinforce the importance of TL in promoting interpersonal trust within organisations. Thus, in order to enhance employee interpersonal trust within organisations, practising transformational leadership is considered a main key in building up the employees' trust in their leaders.

Prior studies indicate the important role transformational leadership plays in building up subordinate's trust in their leaders, which is a crucial way to achieve a competitive advantage by encouraging knowledge sharing among employees (Le & Lei, 2018). Several scholars, including (Bass, 1985; Judge & Piccolo, 2004), have also observed that transformational leaders ensure that their followers are aware of job outcomes, directing them toward exceeding expectations, stimulating higher-order substantial needs, and empowering them instead of controlling and micro-managing.

Leaders that show their ability to abandon self-gains for collective aims and keep uniformity in their words and actions are more likely to be seen as trustworthy and have a greater level of cognitive trust from their subordinates. Moreover, Holtz and Harlod (2008) argued that followers who are aware of their leaders' TL behaviour are more likely

to trust them as leaders. Wang et al. (2016) showed a positive and substantial association between transformational leaders and employee trust in the leader, and they defined trust as an indication of the strength of the relationship between leaders and employees.

Applying the four elements of transformational leadership within organisations helps in building trust (Jung & Avolio, 2000). Idealized influence refers to the capacity to promote a fresh understanding of the purpose, promote one's self-worth, and earn the respect and trust of others. By demonstrating intellectual stimulation, transformational leaders should generate a greater level of trust in subordinates. Leaders also encourage their followers to be involved in the decision-making process by inspiring and fostering employee innovation. By adopting such practices, leaders enhance the emotional link with their followers, eventually raising the affective trust level as well as the cognitive trust level. As a result, followers' opinions of their leader's competence, honesty, and reliability are enhanced.

Leaders who practice inspirational motivation are leaders who communicate high expectations to their subordinates by demonstrating dedication and commitment towards organisational objectives. This is achieved through clearly articulated communication and instilling confidence in their employees. Furthermore, such leaders focus on enhancing their followers' trust (Avolio, 1999; Bass, 1985). Followers who are well-informed about a leader's objectives and are influenced by their behaviour may contribute toward achieving organisational objectives and will be more eager to participate in a process of social exchange. An inspirational leader's followers may develop a deeper emotional attachment when they have a better knowledge of and acceptance of his or her beliefs (Lewicki & Stevenson, 1997).

Nevertheless, when leaders are successful in realising their vision, it will improve followers' perceptions of their boss as a capable, trustworthy, and reliable leader who effectively achieves organisational goals, resulting in cognitive trust. Higher levels of trust among individuals who follow a transformational leader should arise from an individual's ability to provide individualised consideration to followers (Jung and Avolio, 2000). Individualised consideration is also projected to increase adherent perceptions of the personality of the leader in terms of competence, dependability, and honesty, resulting in higher levels of cognitive trust (Dirks & Ferrin, 2002).

It is important to state that data collection in this research was conducted during COVID lockdown in Jordan, and the results reveal that TL showed positive relationship with innovation, interpersonal trust and knowledge sharing. This research showed that COVID did affect the perception of employees regarding leadership in the banking sector in Jordan.

Section two:

This section addresses the direct effects of IT on product and process innovation within the Jordanian banking sector. This responds to Hui et al. (2018)'s call for more research on interpersonal trust relationships with specific features of innovation. Additionally, this section responds to the study's fifth question: "What is the effect of IT on product and process innovation within the Jordanian banking sector?".

The SEM analysis of the data did not support the hypothesised relation between IT and product and process innovation (H7: IT positively influences product innovation; H8: IT positively influences process innovation).

The result of the study indicates that the influence of IT on both products and processes was non-significant, for product innovation ($\beta = 0.000$) with P-value of (0.998) and for process innovation ($\beta = -0.054$) with a P-value of (0.404), providing an interesting finding for the Jordanian banking sector.

The current research suggests that previous research did not yield the same outcomes when it comes to interpersonal trust and innovation. The justification of the outcomes is related to the definition of interpersonal trust as explained by Murphy (2002), which is building social relationships and promoting mutual learning, that were prohibited during the time of conducting this research. This could be due to the reduced social interaction levels that were negatively impacted by concurrent circumstances.

In fact, these findings do not underestimate the value of interpersonal trust in promoting innovative performance. Research indicates that interpersonal trust increases innovative abilities. Previous empirical studies such as (Zhang et al., 2018; Ellonen et al., 2008; Golipour et al., 2011; Le & Lei, 2018) reported a significant influence of interpersonal trust on innovation. The importance of trust-based relationships for individual and organisational efficiency has been underlined by the improvements in the organisational efficiency. It is the basis for an organisation's innovation capabilities to be built and developed (McAllister, 1995). Le and Lei (2018) highlighted that employee trust is strongly and highly correlated with knowledge sharing and information exchange, which is critical for organisations to adopt the required adjustments and innovate since knowledge and learning ability are significantly associated with a firm's innovation capability on two levels: both the speed and the quality of innovation.

Interpersonal trust was explained by Bligh (2017) as the active links and emotional bonds among the organisation's employees, which are linked to several beneficial firm outcomes, for example, employee satisfaction and organisational performance. Interpersonal trust is stressed as a factor of innovative behaviour among employees and a driver of innovation capability (Ellonen et al., 2011). Murphy (2002) argued the important role of trust in building social relationships and its role in enhancing effective knowledge sharing, encouraging capacity building, promoting mutual learning, and finally promoting employees' motivation to be innovative. According to Zhang et al. (2018), fostering trust in interpersonal relationships will help to promote the KS culture and create a positive cooperative for fostering creativity and innovation abilities. However, such findings indicate weakness in the Jordanian banking sector in aligning interpersonal trust capabilities to promote innovative performance. Paying more attention to these issues may help the leaders of the surveyed banks foster the innovative capability of their organisations.

7.5 Discussion of Objective four: To examine the mediation impact of KS and IT on the TL-Innovation relationship in Jordanian banking sector.

This section addresses the mediation effects of KS and interpersonal trust on product and process innovation within the Jordanian banking sector, which represents the study's sixth objective. Additionally, this part responds to the study's sixth and seventh questions: Does KS mediate the relationship between TL and innovation within the Jordanian banking sector? Does IT mediate the relationship between TL and innovation within the Jordanian banking sector? This section is divided into two subsections: the mediation effect of KS

on the TL-innovation relationship and the mediation effect of interpersonal trust on TL-innovation.

7.5.1 Mediation effect of KS on TL-innovation relationship

The result of the study indicates that the KS factor failed to be significant as a mediator factor in the TL-innovation relationship, for product innovation, it scored a very low coefficient (0.030) with a lower bound (-0.130) and upper bound (0.130) with P-value (0.651). for the process innovation it also scored low coefficient (0.007) with a lower bound (-0.244) and upper bound (0.193) with P-value (0.959). Thus, providing an interesting finding for the Jordanian banking sector. Thus, the results of the SEM did not support the hypothesised relations (H9: Knowledge sharing mediates the positive association between TL and product innovation; H10: Knowledge sharing mediates the positive association between TL and process innovation).

These findings do not underestimate the value of KS in promoting the relationship between TL and innovative performance. Research indicates that KS plays as a mediation factor between TL and innovation. Previous empirical studies such as (Le and Lei, 2019; Lei et al., 2019; Zheng et al., 2017), reported a significant influence of KS on the TL-innovation relationship.

Castaneda and Cuellar (2020) stated that modern infrastructure, technology, and economic resources all support innovation, but knowledge sharing among employees is the most important factor. Kremer (2019) also confirmed that knowledge sharing is the main factor in supporting innovation, and it is unlikely that innovation happens without knowledge sharing. Innovative behaviour requires continuous examination of present challenges to find new solutions in creative ways. Consequently, sharing knowledge can

help staff focus on current concerns as well as future challenges (De Jong & Den Hartog, 2007).

In addition, Xiao et al. (2017) stated that the present literature has validated the role of KS as a mediator in the relationship between transformational leadership and different forms of innovation (Choi et al., 2016). Knowledge sharing is considered to be the main key driver in enhancing organisational innovation (Le and Lei, 2017; Wang et al., 2017).

7.5.2 Mediation effect of IT on TL-innovation relationship

The result of this study indicates that the interpersonal trust factor failed to be a significant mediator factor in the TL-innovation relationship. For product innovation, it scored a very low coefficient (0.000) with a lower bound (-0.067) and an upper bound (0.059) with a P-value (0.986). For process innovation, it also shows a very low coefficient (-0.041) with a lower bound of (-0.175) and an upper bound of (0.070) with a P-value of (0.442). Thus, the study result extends an interesting finding for the Jordanian banking sector. Thus, the results of the SEM did not support the hypothesised relations (H11: interpersonal trust mediates the positive association between TL and product innovation; H12: interpersonal trust mediates the positive association between TL and process innovation).

In fact, these findings do not underestimate the value of IT in promoting the relationship between TL and innovative performance. Research indicates that IT works as a mediation factor between TL and innovation. Previous empirical studies such as (Hui et al., 2018) reported a significant influence of IT on the TL-innovation relationship.

Hui et al. (2018) examined the relationships between interpersonal trust, transformational leadership style, and the innovation capacity of Vietnamese enterprises in their study to examine an effective strategy for boosting the innovation potential of organizations.

Interpersonal trust and transformational leadership showed a significant influence on innovation potential. Moreover, it was established that interpersonal trust also acts as a mediator in the relationship between transformational leadership and innovative potential.

Despite the fact that the mediation roles of KS and IT were not supported in the relationship between TL and innovation, this research reported a consequence caused by social distance imposed on the business environment.

In fact, the COVID-19 pandemic led to fundamental changes in the business context. Whereas the theoretical literature did not provide any insight about the role of knowledge sharing and interpersonal trust on innovation performance. In 2020, the COVID-19 pandemic has significantly altered the way people work. Since the unprecedented global crisis was accompanied by uncertainty and ambiguity, organisations have had difficulties supporting employees' productive work during the disruption (Lee et al., 2021; Gallup, 2020).

According to Kim and Rhee (2011), employees are more likely to resolve problems quickly when they practice knowledge sharing or when they share expertise during a crisis. Moreover, this results in engendering innovation within organisations (Tulshyan, 2020). Thus, during a crisis, it is essential to have appropriate strategies in place in order to ensure knowledge sharing between the employees (Lee et al., 2021).

In the results of this study, opposite explanations were obtained, and therefore the pandemic may be seen as a disturbing key function of important competencies in the management of organisations. Since knowledge sharing and interpersonal trust are no longer successful in fostering innovative performance.

Therefore, this reality leads to conform to the new trend in scientific research, which demands a departure from the familiar research scenarios and not to be drawn into what was presented and assumed by theoretical literature decades ago. This is due to the fundamental change that the pandemic has casted on the organisation's work environment, and therefore, a new vision must be adopted in relation to factors of the work environment, and this is what future studies should pay attention to.

This study contributes to the literature on TL and the banking sector as it puts together a model that tests the influence of TL on innovation performance and integrates mediators. Although the study failed to provide support for proposed mediators, it detected critical shortcomings that can be explained by COVID-19 restrictions imposed at the time of collecting data.

Since this study was conducted in the era of COVID-19, therefore, unexpected results were reported. However, a logical explanation was provided for these results, which led to proposing a call for upcoming studies to extend this model by integrating moderators. This integration can trigger our proposed mediators to take its suggested roles again and become effective in explaining how TL can promote product/ process innovation.

This study proposed a mediation framework that incorporates two mediators to explain the link between TL and product/ process innovation in a systematic manner. The proposed mediators were guided by the body of literature and empirical findings that supported the prepositions for both interpersonal trust and knowledge sharing (Hui et al., 2018; Xiao et al., 2017). However, the empirical findings of this study were in contradiction with the expected results, and as stated earlier, it does not underestimate the power of

the proposed model. It, instead, reveals a fundamental flaw in the studied sector. As discussed earlier, interpersonal trust and knowledge sharing levels are in moderate levels, showing reasonable progress in the surveyed banks.

This study was conducted during the COVID-19 pandemic, which serves as a critical timeframe to conduct a research study (Gallup, 2020). Therefore, as it is called by the stream of researchers to investigate the consequences caused by the pandemic on firms' performance during and after the pandemic, this study serves as a contribution to the said research call (Gallup, 2020).

The proposed conceptual framework of this study was developed before the pandemic, whereas the data collection took place at the peak of the pandemic. Most of the business operations were halted during this period. Due to social distance restrictions imposed by COVID, businesses had to stop their operations suddenly before being able to move to online working set-up. Therefore, the majority of business organisations were in a transition stage from interrupting operations for a period of time to adopting online working remotely and resuming operations (Winasis et al., 2020; Demirgüç-Kunt et al., 2021).

This new working methodology was considered for the first time and in the context of Jordan. Whereas in developed countries, business may have provided with prior training or experience for remote work methods in case a crisis happens.

Thus, it can be seen that the period of conducting the study was a transitional period for the majority of business organisations, and it can be said, according to many reports and newsletter publications related to the business sector—due to the lack of publications in this regard published in scientific journals of international index—that the period was marred by confusion among organisations and firms (Thakur, 2021; Lambert et al., 2020).

As the readiness toward adopting remote work was completely new to the business organisations of most developing countries.

The model of this study may be adopted with extending and revising attempts to provide solutions to the obstacles and difficulties that the pandemic has put in front of knowledge sharing and interpersonal trust capabilities. Upcoming research should provide solutions and practical implications that can help firms to restore work operations and performance aspects' dependability in the manner suggested.

Also, the recent literature indicates that COVID-19 is causing a lot of fear, uncertainty, and anxiety worldwide (Shakibaeiet al., 2021; Rajesh, 2021). Thus, it can also be taken into account that, in particular, both interpersonal trust and knowledge sharing are factors that are based on social interaction among partners. As a result of the restrictions imposed during the pandemic and changes in work operations, these two capabilities are significantly reframed, as their essence is social interaction, and researchers and the literature body should place more emphasis on such capabilities that are fundamentally dependent on social interaction to provide firms with solutions for overcoming COVID-19 obstacles.

To the best of the researcher's knowledge, this study is the first to test the mediation role of knowledge sharing and interpersonal trust in influencing product and process innovation in the banking sector of Jordan in the time of COVID-19 restrictions. Understanding such mechanisms leads to a better understanding of how to overcome the obstacles of COVID-19.

Chapter 8: Conclusion

Chapters 1–7 presented the objective of the study, a literature review, a conceptual framework, methodology, data analysis and descriptive results, empirical findings, and discussion of the findings, respectively. This chapter presents the final part of this thesis. Also, this chapter provides theoretical and practical implications that will help leaders and policymakers within the Jordanian banking sector overcome the challenges that they might face in the future. This chapter highlights how the implications of this study could help leaders and policymakers improve and enhance their current positions. Also, in order to help future researchers overcome the gaps in conducting similar studies, important limitations are provided.

The main aim of this study was to investigate the impact of transformational leadership on innovation by integrating the mediating roles of knowledge sharing and interpersonal trust within the Jordanian banking sector. Exploring such relationships within the Jordanian banking sector was crucial in order to understand the relationship between leaders and employees, aiming to enhance employee knowledge sharing and interpersonal trust, which can potentially lead to organisation innovation.

This chapter presents an overview of the study and summarises the key findings that were obtained using the quantitative technique. Discussions are had about the implications for theory and practise. Finally, a limitation and suggestions for further study are given.

8.1 Concluding remarks

This study aimed to examine the impact of TL on innovation by integrating knowledge sharing and interpersonal trust as mediation factors within the Jordanian banking sector. The study proposes that there is a relationship between transformational leadership and innovation and also suggests that knowledge sharing, and interpersonal trust mediate this relationship. And in this chapter, the outcomes of this study will be revealed. A quantitative approach guided this study to collect respondents' perceptions using a self-administered questionnaire. 19 questions were asked to cover the transformational leadership concept. 12 questions were asked to cover the innovation concept. 12 questions were asked to cover interpersonal trust. Finally, 8 questions were asked to cover knowledge sharing. In total, 51 questions were asked to collect data from 13 registered banks in the Irbid governorate. Furthermore, the responses were coded into the PC using SPSS v.26 software and deemed suitable for analysis to test the casual relationship between TL, KS, IT, and innovation.

The researcher chose a larger sample size (418 respondents) that exceeded the required minimum sample size to avoid sample reduction during the data screening phase. This study adopted a two-step methodology to analyse the data. Confirmatory factor analysis (CFA) was used to assess reliability and validity. Then structural equation modelling (SEM) was used to test the hypotheses using IBM SPP AMOS (v.23) software. In total, 627 questionnaires were distributed, of which 588 were filled out and returned, making a response ratio of 93.77%. However, after completing the data screening phase, a total of 418 usable responses were deemed for further analysis. 168 responses that had regular patterns were excluded, and another two observations were excluded due to outliers.

Furthermore, preliminary analysis validated that data suitability for parametric analysis, normality, multicollinearity, and bias were not serious issues.

The demographic profile showed diversity in the sample in terms of gender, age, education, experience, salary, etc. Additionally, the descriptive analysis provided many indicators concerning TL practises and innovation performance in the banking sector in Jordan, as TL levels were moderate, innovation levels were high, and both interpersonal trust and knowledge sharing levels were moderate. Finally, EFA provided insights into the essential underlying structure of the dataset. By dropping 4 items, this study was able to extract a clear component matrix that satisfied scale structure. Cronbach alpha prevailed for the internal consistency of the revised scales. Additionally, by applying the CFA, the measurement model was validated, indicating that the model fit the sample data. Furthermore, the structure model was tested through path analysis to provide a decision for the proposed hypothesis. Structural Equation Modelling (SEM) with AMOS.23 was applied to test the proposed hypothesis, which conceptualised the casual relationship between TL, KS, IT, and innovation within the Jordanian banking sector.

It is important to state that data collection in this research was conducted right after the COVID-19 lockdown in Jordan, and the results reveal that TL showed a positive relationship with innovation, interpersonal trust, and knowledge sharing. This research showed that COVID-19 did affect the perception of employees regarding leadership in the banking sector in Jordan.

The results of SEM support the hypothesised relations (H1: TL is positively related to product innovation; H2: TL is positively related to process innovation). Thus, the first question is answered. Moreover, the findings of this study suggest that TL practises have a positive "moderate" direct influence on product/ process innovation within the banking sector in Jordan. In this sense, the significant direct influence of TL on product and

process innovation provides validated proof for expanding the body of literature that links TL practises to innovation. It also recognises that employing suitable TL practises is an efficient and effective driver of employees' innovation, which is expected to subsequently help banks achieve other favourable outcomes. Despite the fact that all dimensions of TL are high, inspirational motivation is the lowest when compared to intellectual stimulation. This indicates that the employees are more challenged by their leaders when compared to their approach to the organisation's mission and objectives. This indicates that employees are seeing the leaders as more influential when compared to other factors. This could be related to the structure of the banking industry in Jordan and the impact of competition between branches of the banks in different areas.

The results of the SEM supported the hypothesised relation between TL and KS (H3: TL is positively and significantly associated with knowledge sharing within the Jordanian banking sector). Thus, the second question is answered. The result of this study reveals that applying transformational leadership within the Jordanian banking sector enhances knowledge sharing between managers and employees. Moreover, the study results indicate that using suitable TL will improve and enhance employee knowledge sharing. Results also show that TL plays a significant role in fostering knowledge sharing. It also demonstrates the robustness of TL in divining many capabilities for firms. Additionally, the research suggests that transformational leaders may establish innovative work environment that encourages knowledge sharing by inspiring people, establishing the procedures and structures necessary for knowledge sharing to begin within organisations, and developing a shared vision (Salo, 2009; Shi, 2010).

The results of the SEM supported the hypothesised relation between TL and IT (H4: TL is positively and significantly associated with interpersonal trust within the Jordanian banking sector). Thus, the third question is answered. According to the study's findings,

implementing transformational leadership within the Jordanian banking sector improves management and employee interpersonal trust. It demonstrates the power of TL in determining a variety of company capacities. The study findings also highlight the crucial role of TL in fostering interpersonal trust throughout organisations. In order to increase employee interpersonal trust inside organisations, transformational leadership is therefore seen as a critical factor in increasing employees' confidence in their managers.

The results of the SEM did not support the hypothesised relationship between knowledge sharing and product and process innovation (H5: knowledge sharing is positively and significantly associated with product innovation; H6: knowledge sharing is positively and significantly associated with process innovation). The result of this study indicates that the influence of knowledge sharing on both products and processes was not significant, which is an interesting finding for the Jordanian banking sector. Such findings, however, point to a weakness in the Jordanian banking sector's integration of knowledge-sharing capabilities to support innovative performance. Leaders and people in charge of the surveyed banks should take this into consideration when handling such challenges. This weakness may be explained by the lack of trust among employees during the COVID-19 period, which was brought on by social distance. Social relationships also encourage members of an organisation to engage in ways that are mutually beneficial. Organisations frequently share knowledge through interpersonal communication and social capital. The social interactions within organisations were impacted by COVID-19 regulations.

The results of the SEM did not support the hypothesised relation between IT and product and process innovation (H7: interpersonal trust is positively and significantly associated with product innovation; H8: interpersonal trust is positively and significantly associated with process innovation). The finding of this study reveals that the influence of IT on both products and processes was non-significant, providing an interesting finding for the

Jordanian banking sector. According to the current study, earlier studies on interpersonal trust and innovation did not provide the same results. The explanation of the findings is based on Murphy's (2002) definition of interpersonal trust, which emphasises the development of social relationships and the encouragement of mutual learning—activities that were outlawed during the time this research was being conducted.

In terms of the mediation effect of KS on the TL-innovation relationship, the result of this study indicates that the KS factor failed to be significant as a mediator factor, providing an interesting finding for the Jordanian banking sector. Thus, the results of the SEM did not support the hypothesised relations (H9: knowledge sharing mediates the positive association between TL and product innovation; H10: knowledge sharing mediates the positive association between TL and process innovation). Moreover, in terms of the mediation effect of IT on the TL-innovation relationship, the result of this study indicates that the interpersonal trust factor failed to be significant as a mediator factor in the TL-innovation relationship. Thus, the results of the SEM did not support the hypothesised relations (H11: interpersonal trust mediates the positive association between TL and product innovation; H12: interpersonal trust mediates the positive association between TL and process innovation).

However, due to the contrary explanations that were found in the study's results, the pandemic (COVID-19) may be viewed as a disturbing key function of critical competencies in organisational management. Since knowledge sharing and interpersonal trust are no longer successful in fostering innovative performance, it is necessary to conform to the new trends in scientific research, which requires a departure from familiar research scenarios and not to be drawn into what was presented and assumed by theoretical literature decades ago. This is due to the fundamental change that the pandemic has cast on the organisation's work environment, and therefore, a new vision

must be developed with respect to factors of the work environment, and this is what future studies could pay attention to.

8.2 Theoretical and practical implication

Based on earlier results and discussions, this study provides a set of theoretical and practical implications. The theoretical implications should be taken into account by other researchers and future studies in directing their research concerning TL and innovation in the banking sector. On the other hand, the practical implications should be considered by the leaders and policymakers in the Jordanian banking sector to maintain their work practises and obtain better innovative performance levels that can help in achieving competitive advantage. The following sub-sections provide the theoretical and practical implications:

8.2.1 Theoretical implication:

This study contributes to the literature related to the banking sector in developing countries in several ways. Firstly, it enhances our understanding of the relationship between TL and innovation by applying it to a new setting, that is, product and process innovation within the Jordanian banking sector. These relationships (transformational leadership and product/process innovation) have not been studied or tested in the banking sector previously, particularly in developing countries like Jordan, except for a handful of studies from Lebanon and Iraq. The current study takes these arguments further to redress this research gap.

Through a range of measures that increase followers' awareness of other group members' contributions, TL is known to produce powerful impacts (Al-Husseini & Elbeltagi, 2016). Furthermore, as shown in this study, leaders who practice this type of

leadership style have the ability to motivate and encourage followers to be more effective within the organisation by paying attention to the followers' desires and personal needs.

The findings of this study confirm that the four characteristics of TL (idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration) have a significant impact on product and process innovation within the Jordanian banking sector. In this sense, the significant direct influence of TL on product and process innovation provides validated proof for expanding the body of literature that links TL practices to innovation. It also recognises that implementing suitable TL practices are efficient and effective drivers for employees' innovation, which is expected to subsequently help banks to achieve other favourable outcomes. Moreover, results in the current study also provide a better understanding of the relationship between TL and innovation as they reveal how TL elements affect the development of abilities that do not arise from a standard leadership style (Al-Husseini & Elbeltagi, 2016).

Secondly, the study results confirm and support the link between TL and KS. Leaders by practicing TL will provide the suitable environment to promote KS. Furthermore, this study has clarified specific aspects of TL (idealised influence, inspirational motivation, intellectual stimulation and individualised consideration) and their impact on knowledge sharing within the Jordanian banking sector. Thus, the finding of this study suggests clear ideas for leaders about the appropriate behaviour that must be adapted to promote KS among their employees. Moreover, the findings of this study also suggest that using appropriate TL will enhance employee knowledge sharing. Results further show that TL plays a significant role in fostering knowledge sharing. It also shows the robustness of TL in divining many capabilities for firms. Additionally, the research suggests that transformational leaders may establish a work environment that encourages knowledge sharing by inspiring people, establishing the procedures and structures necessary for

knowledge sharing to begin within firms, and developing a shared vision (Salo, 2009; Shi, 2010).

Thirdly, the results of this study support the link between TL and IT. Leaders practicing the four aspects of TL (idealised influence, inspirational motivation, intellectual stimulation and individualised consideration) can promote and encourage interpersonal trust between employees. This information can help leaders with ideas about the appropriate behaviour that they can use to promote IT between employees. Findings of this research are in congruence with previous research (Le and Lei ,2018; Hui et al., 2018) that transformational leadership has positive impact on interpersonal trust. Results reinforce the importance of TL in promoting interpersonal trust within organisations. Thus, in order to enhance employee interpersonal trust within organisations, practicing transformational leadership is considered a main key in building up employees' trust in their leaders.

Fourthly, the finding of studying the relationship between KS and process/product innovation was against the proposed hypothesis. The research result indicates that there is no significant relationship between KS and process/product innovation within the Jordanian banking sector. However, such findings suggest a defect in the Jordanian banking sector in aligning knowledge sharing capabilities to promote innovative performance. Leaders may eliminate this drawback by designing their practices that promote knowledge sharing. As noted earlier, this defect may also be explained by the absence of trust among employees during the COVID-19 period, which implicated physical and social distance amongst employees. Social relationships also encourage members of an organisation to engage in ways that are mutually beneficial, which eventually enhances interpersonal trust between individuals.

Organisations frequently share knowledge through interpersonal communication and social interaction, thus building valuable social capital. These social interactions within organisations were impacted by COVID-19 regulations, which eventually had a negative impact on interpersonal trust, ultimately negatively impacting knowledge sharing and, process/ product innovation within the Jordanian banking sector.

Fifthly, the finding of studying the relationship between IT and product and process innovation was also against the proposed hypothesis. The research result indicates that there is no significant impact of IT on product and process innovation within the Jordanian banking sector. The results of current research do not coincide with previous studies that noticed a significant relationship between interpersonal trust and innovation. The justification of the outcomes can be attributed to the meaning of interpersonal trust in the existing literature. As explained by Murphy (2002), building social relationships and promoting mutual learning play an important role in enhancing effective knowledge sharing, encouraging capacity building, and eventually promoting employees' motivation to be innovative. However, these promotional attributes were very restricted while conducting this research due to COVID-19 implications.

Sixthly, the findings of this study about the mediator role of knowledge sharing and interpersonal relationships between transformational leadership and innovation were contrary to the study's proposed hypothesis. Research findings imply that knowledge sharing does not have any significant mediation role while defining the relationship between TL and IN within the Jordanian banking sector. This insignificant impact of knowledge sharing in defining the relationship between TL and IN can be attributed to certain factors, such as a lack of trust among employees, as well as between employees

and leaders. This lack of trust could be a product of certain social distancing measures that were needed to be taken during COVID time. COVID also had an impact on the amount of time that employees and leaders used to spend with each other physically. All these factors combined may have contributed to the insignificant role of KS in defining the relationship between TL and IN.

Thus, the current study suggests that leaders within the Jordanian banking sector could encourage their employees to share their knowledge by enhancing the trust between employees. Moreover, leaders can enhance their employees' self-confidence by practicing the suitable transformational leadership.

8.2.2 Practical implication

This study has implications for managers and policymakers in the Jordanian banking sector. Firstly, the result of this study demonstrated the important role of TL in fostering product and process innovation within the Jordanian banking sector. Thus, the banking sector must encourage applying transformational leadership as a way to focus efforts on the development of their employees. Furthermore, leaders should inspire their employees to be involved in product and process innovation, by motivating them to look for new training programmes, attend workshops that help improve innovation.

For the Jordanian banking sector, the result of this study reveals that inspirational motivation and individualised consideration had the lowest mean value. Therefore, leaders should focus more on practising inspirational motivation and individualised consideration, as the two factors are known to be critical in empowering employees' performance and innovation.

The results of this study indicate that TL is essential to practice KS within the Jordanian banking sector. Transformational leaders are able to improve the organisational culture by enhancing trust between employees and encouraging them to overcome their natural resistance to sharing what they know. Therefore, in order to have a better organisational environment with successful knowledge sharing climate it is vital to practice transformational leadership. Additionally, leaders are advised to maintain their TL practices to improve KS among their employees and promote interpersonal link with their employees.

The findings of this study show that TL also plays a main role in enhancing interpersonal trust. Therefore, it is important to encourage the leaders to adopt transformational leadership practices in order to improve interpersonal trust. Moreover, it is very important to have high interpersonal trust between employees, especially in the banking sector, as it helps in achieving the required goals.

The study findings showed that practicing knowledge sharing was very poor within the Jordanian banking sector and did not have any impact on product and process innovation. Therefore, leaders within the Jordanian banking sector should pay more attention to knowledge sharing by encouraging employees to share their knowledge within the organisation. Leaders should promote knowledge sharing behaviour between organisation's employees to increase new innovative ideas that lead to product and process innovation. Furthermore, as data was collected during a pandemic (COVID-19), it is necessary to highlight how such a pandemic affected the practice of knowledge sharing. Thus, leaders must improve the way they deal with disasters and crises in the future within the Jordanian banking sector. Leaders must encourage employees to attend workshops and training programmes to improve the working environment during a crisis.

Similarly, interpersonal trust failed to have an impact on product and process innovation within the Jordanian banking sector. Therefore, by practicing the appropriate transformational leadership, leaders will have the ability to enhance the trust culture within the organisation. Moreover, leaders must foster interpersonal trust between employees in order to promote knowledge sharing culture and create a positive atmosphere for creativity and innovation abilities.

8.3 Limitation and recommendation future studies

This study examined the impacts of transformational leadership on innovation through integrating knowledge sharing and interpersonal trust as a mediator factor within the Jordanian banking sector in the Irbid Governorate. The study was based on the questionnaire method to collect the relevant data; this method often reflects trends that are affected by many factors that are difficult to control. Consequently, these factors may affect the answers of the respondents. Still, it is worth mentioning that some of the subjects of this study avoided answering the survey for fear of disclosing their identities.

This study has its limitations:

- The results of this study were cross-sectional based, these short periods of measurement will provide the researcher with limited data for analysis.
- This study primarily considers the transformational leadership style, which is usually linked with transactional leadership. Therefore, the research might lack the relationship of transformational with transactional leadership.
- The sample of this study was limited to the Jordanian banking sector and to the Irbid governorate. Thus, results cannot be generalised to other countries, governorates, and other sectors.
- The proposed conceptual framework of this study was developed before the pandemic, whereas the data collection took place at the peak of the pandemic. Most of the business operations were halted during this period. Due to social distance restrictions imposed by COVID, businesses had to stop their operations suddenly before being able to move to an online working setup. Therefore, the

majority of business organisations were in a transition stage from interrupting operations for a period of time to adopting online working and resuming operations.

- This study adopted a self-administrated questionnaire (the delivery and collection) to complete the data collection stage. Multiple methods, such as online questionnaires or postal questionnaires, might have contributed to a larger response rate.

With regards to the limitations of this study mentioned above, there are some recommendations to be considered for future research:

- Longitudinal studies can provide more information. Thus, an opportunity by examining the progress and change in the working environment.
- Future studies might examine the effects of the two styles of leadership to determine which has the most influence on knowledge sharing, interpersonal trust, and process and product innovation.
- Further studies should examine such relationships further in other governorates and other sectors, such as the higher education sector, the telecommunications sector, and the health sector, to examine whether the results of the current study are supported or not. Moreover, for further validity, the model could be extended to different cities, countries, and cultures, and this may lead to different findings.
- Research should take into account the state of the business during pandemics and during normal situations.
- The model of this study may be adopted with extending and revising attempts to provide solutions to the obstacles and difficulties that the pandemic has put in front of knowledge sharing and interpersonal trust capabilities. Upcoming research

should provide solutions and practical implications that can help firms restore work operations and performance aspects' dependability in the manner suggested.

- In addition to quantitative methods for collecting data, future research should adopt qualitative methods such as conduct interviews and focus groups with mainly upper management to gain more insights on transformational leadership and innovation. Moreover, qualitative studies are highly encouraged to explain the impact of transformational leadership on innovation through integrating knowledge sharing and interpersonal trust as mediator factors within the Jordanian banking sector, since a qualitative approach can provide more in-depth details.

References

- Abbas, J., & Kumari, K. (2021). Examining the relationship between total quality management and knowledge management and their impact on organizational performance: A dimensional analysis. *Journal of Economic and Administrative Sciences*.
- Ackoff, R. L. (1989). From data to wisdom. *Journal of Applied Systems Analysis*, 16(1), 3–9.
- Adner, R., & Levinthal, D. (2001). Demand heterogeneity and technology evolution: implications for product and process innovation. *Management science*, 47(5), 611–628.
- Afshari, L. (2021). Idealized influence and commitment: A granular approach in understanding leadership. *Personnel Review*. doi:10.1108/PR-03-2020-0153
- Afuah, A. (2003). *Innovation management* (σσ. 291–305). New York: Oxford university press.
- Ahmed, P., & Shepherd, C. D. (2010). *Innovation management: Context, strategies, systems and processes*. Pearson.
- Akram, T., Lei, S., Haider, M. J., & Hussain, S. T. (2020). The impact of organizational justice on employee innovative work behavior: Mediating role of knowledge sharing. *Journal of Innovation & Knowledge*, 5(2), 117–129.

- Al Ahmad, S., Easa, N. F., & Mostapha, N. (2019). *The effect of transformational leadership on innovation: Evidence from Lebanese Banks*.
- Al-Abedallat, A. Z. (2017). The Role of the Jordanian Banking Sector in Economic Development. *International Business Research*, 10(4), 139–139.
- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 107–136.
- Albury, D. (2005). Fostering innovation in public services. *Public money and management*, 25(1), 51–56.
- Al-Fayoumi, N. A., & Abuzayed, B. M. (2009). Assessment of the jordanian banking sector within the context of GATS agreement. *Banks and Bank Systems*, 4(2), 69–79.
- Al-Husseini, S., & Elbeltagi, I. (2016). Transformational leadership and innovation: a comparison study between Iraq's public and private higher education. *Studies in Higher Education*, 41(1), 159–181.
- Al-Husseini, S., El Beltagi, I., & Moizer, J. (2019). Transformational leadership and innovation: The mediating role of knowledge sharing amongst higher education faculty. *International Journal of Leadership in Education*, 1–24. doi:10.1080/13603124.2019.1588381
- Al-Husseini, S., El Beltagi, I., & Moizer, J. (2021). Transformational leadership and innovation: the mediating role of knowledge sharing amongst higher education faculty. *International Journal of Leadership in Education*, 24(5), 670–693.
- Ali, A. A., Paris, L., & Gunasekaran, A. (2019). Key factors influencing knowledge sharing practices and its relationship with organizational performance within the oil and gas industry. *Journal of Knowledge Management*.

- Al-Jaghoub, S., & Westrup, C. (2003). Jordan and ICT-led development: towards a competition state? *Information Technology & People*, 16(1), 93–110. doi:10.1108/09593840310463032
- Alnesr, B., & Ramzani, S. (2019). The impact of transformational leadership on innovation through the mediating role of knowledge sharing in public and private universities of Syria. *Journal of Business and Management*, 21(2), 76–82.
- Al-Omari, A. A., Abu Tineh, A. M., & Khasawneh, S. A. (2013). Faculty members' attitudes, expectations and practises of Knowledge Management at higher education institutions in Jordan. *International Journal of Management in Education*, 7(1–2), 199–211.
- Al-Salaymeh, M. (2013a). Creativity and Interactive Innovation in the Banking Sector and its impact on the Degree of customers' Acceptance of the Services provided. *International Journal of Academic Research in Business and Social Sciences*, 3(5), 139.
- Al-Salaymeh, M. (2013b). Creativity and Interactive Innovation in the Banking Sector and its impact on the Degree of customers' Acceptance of the Services provided. *International Journal of Academic Research in Business and Social Sciences*, 3(5), 139.
- Alsharo, M., Gregg, D., & Ramirez, R. (2017). Virtual team effectiveness: The role of knowledge sharing and trust. *Information & Management*, 54(4), 479–490.
- Alzawahreh, A. A. (2011). Transformational leadership of superiors and creativity level among faculty members in Jordanian universities. *Journal of Institutional Research South East Asia*, 9(1), 125–132.

- Amabile, T. M. (1998). How to kill creativity. *Harvard Business Review on Breakthrough Thinking*, 1–29.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411.
- Anderson, N., Potočník, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40(5), 1297–1333.
- Andreeva, T., & Kianto, A. (2011). Knowledge processes, knowledge-intensity and innovation: A moderated mediation analysis. *Journal of Knowledge Management*, 15(6), 1016–1034. doi:10.1108/13673271111179343
- Anwar, R., Rehman, M., Wang, K. S., & Hashmani, M. A. (2019). Systematic literature review of knowledge sharing barriers and facilitators in global software development organizations using concept maps. *IEEE Access*, 7, 24231–24247.
- Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of knowledge management*, 7(1), 64–77.
- Armstrong, M., & Taylor, S. (2009). *Armstrong's handbook of human resource management practice*. Kogan Page Publishers.
- Asrar-ul-Haq, M., & Anwar, S. (2016). A systematic review of knowledge management and knowledge sharing: Trends, issues, and challenges. *Cogent Business & Management*, 3(1), 1127744.

- Astrachan, C. B., Patel, V. K., & Wanzenried, G. (2014). A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. *Journal of Family Business Strategy*, 5(1), 116–128.
- Atkinson, S., & Butcher, D. (2003). Trust in managerial relationships. *Journal of Managerial Psychology*.
- Avolio, B. J. (1999). *Full leadership development: Building the vital forces in organizations*. Sage.
- Avolio, B. J., Keng-Highberger, F. T., Lord, R. G., Hannah, S. T., Schaubroeck, J. M., & Kozlowski, S. W. (2020). How leader and follower prototypical and antitypical attributes influence ratings of transformational leadership in an extreme context. *Human Relations*, 0018726720958040.
- Avolio, B., & Bass, B. (2002). *Developing potential across a full range of leadership - cases on transactional and transformational leadership* New York, Lawrence Erlbaum Associates.
- Awang, Z. (2014). *Structural equation modeling using AMOS*. Shah Alam. Malaysia: University Teknologi MARA Publication Center.
- Azema, P., & Jafari, M. (2016). The effect of dimensions of knowledge sharing on a variety of strategic mind map of managers and employees. *Independent Journal of Management & Production*, 7(4), 1256–1283.
- B., M., & H, M. (2014). Knowledge management a way to gain a competitive advantage in firms (evidence of manufacturing companies. *International Letters of Social and Humanistic Sciences*, 3, 80–91.

- Bacha, E. (2014). The relationship between transformational leadership, task performance and job characteristics. *Journal of Management Development*.
- Bagozzi, R. P. (1980). *Causal Modeling In Marketing*. New York: Wiley.
- Barbuto, J. E., & Brown, L. L. (2000). *Full range leadership*. Ανακτήθηκε από <http://www>
- Barling, J., Weber, T., & Kelloway, E. K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, 81(6), 827.
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences*, 42(5), 815–824.
- Bartol, K. M., & Srivastava, A. (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership & Organizational Studies*, 9(1), 64–76.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Collier Macmillan.
- Bass, B. M., & Avolio, B. J. (1990). Developing transformational leadership: 1992 and beyond. *Journal of European Industrial Training*.
- Bass, B. M., & Avolio, B. J. (1994). Transformational leadership and organizational culture. *The International Journal of Public Administration*, 17(3–4), 541–554.
- Bass, B. M., & Avolio, B. J. (2000). *MLQ: Multifactor Leadership Questionnaire, Mind Garden*. Menlo Park, CA.
- Bass, B. M., & Bass, R. (2009). *The Bass handbook of leadership: Theory, research, and managerial applications*. Simon and Schuster.
- Bass, B. M., & Riggio, R. E. (2006). Transformational leadership. *Psychology Press*.

- Bass, B., & Riggio, R. (2012). *Transformational leadership* (2nd έκδ.). US, Lawrence Erlbaum Associates, Inc.
- Becker, S. O., & Egger, P. H. (2013). Endogenous product versus process innovation and a firm's propensity to export. *Empirical Economics*, 44(1), 329–354.
- Behery, M. (2008). Leadership, knowledge sharing, and organizational benefits within UAE. *Journal of American Academy of Business*, 12(2), 227–237.
- Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods*. Oxford university press.
- Bennis, W., & Nanus, B. (1985). *The strategies for taking charge* (σ. 41). Leaders, New York: Harper. Row.
- Bennis, W., Covey, S., Wheatley, M., & Bogle, J. (2002).
- Bentler, P. M. (1988). Causal modeling via structural equation systems. Στο *Handbook of multivariate experimental psychology* (σσ. 317–335). Boston, MA: Springer.
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16(1), 78–117.
- Berggren, C., Bergek, A., Bengtsson, L., Söderlund, J., & Hobday, M. (Επιμ.). (2011). *Knowledge integration and innovation: Critical challenges facing international technology-based firms*. Oxford University Press.
- Bertocci, D. I. (2009). *Leadership in organizations: There is a difference between leaders and managers*. University Press of America.
- Birasnav, M., Albufalasa, M., & Bader, Y. (2013). The role of transformational leadership and knowledge management processes on predicting product and process

- innovation: An empirical study developed in Kingdom of Bahrain. *Tékhne*, 11(2), 64–75.
- Birasnav, M., Rangnekar, S., & Dalpati, A. (2011). Transformational leadership and human capital benefits: The role of knowledge management. *Leadership & Organization Development Journal*, 32(2), 106–126.
doi:10.1108/01437731111112962
- Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. *The Academy of Management Review*, 33(4), 825–845. doi:10.5465/AMR.2008.34421969
- Bligh, M. C. (2017). Leadership and trust”. *Leadership Today*. Doi:10. 1007/978-3-319-31036-7_2.
- Blumberg, B., Cooper, D. R., & Schindler, P. S. (2014). *Business Research Methods*.
- Boer, H., & During, W. E. (2001). Innovation, what innovation? A comparison between product, process and organizational innovation. *International Journal of Technology Management*, 22(1–3), 83–107.
- Boerner, S., Eisenbeiss, S. A., & Griesser, D. (2007). Follower behavior and organizational performance: The impact of transformational leaders. *Journal of Leadership & Organizational Studies*, 13(3), 15–26.
doi:10.1177/10717919070130030201
- Bohlmann, J. D., Spanjol, J., Qualls, W. J., & Rosa, J. A. (2013). The interplay of customer and product innovation dynamics: an exploratory study. *Journal of Product Innovation Management*, 30(2), 228–244.

- Bojica, A. M., & Fuentes, M. D. M. F. (2012). Knowledge acquisition and corporate entrepreneurship: Insights from Spanish SMEs in the ICT sector. *Journal of World Business*, 47(3), 397–408.
- Bollen, K. A. (2014). *Structural equations with latent variables* (1st έκδ.). doi:10.1002/9781118619179
- Bollinger, A. S., & Smith, R. D. (2001). Managing organizational knowledge as a strategic asset. *Journal of Knowledge Management*, 5(1), 8–18. doi:10.1108/13673270110384365
- Boomsma, A. (1985). Nonconvergence, improper solutions, and starting values in LISREL maximum likelihood estimation. *Psychometrika*, 50(2), 229–242.
- Boyd, J., Ragsdell, G., Oppenheim, C., & Martins, B. (2007). Knowledge transfer mechanisms: a case study from manufacturing. *Proceedings of the 8th European Conference on Knowledge Management*, 1, 139–146. Reading: Academic Conferences Limited.
- Brown, S. L., & Eisenhardt, K. M. (1995). Product development: Past research, present findings, and future directions. *Academy of Management Review*, 20(2), 343–378.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford publications.
- Brown, T. A., & Moore, M. T. (2012). Confirmatory factor analysis. *Handbook of Structural Equation Modeling*, 361, 379.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. Στο K. A. Bollen & J. S. Long (Επιμ.), *Testing structural equation models* (σσ. 136–162). Newsbury Park, CA: Sage.

- Bruch, H., & Walter, F. (2007). Leadership in context: Investigating hierarchical impacts on transformational leadership. *Leadership & Organization Development Journal*.
- Bryman, A. (2015). *Social research methods*. Oxford University Press.
- Burgelman, R. A., Maidique, M. A., & Wheelwright, S. C. (1996). *Strategic management of technology and innovation* (τ. 2, σ. 37). Chicago: Irwin.
- Burns, J. M. (1978). *Leadership*. New York: Harper & Row.
- Busari, A. H., Khan, S. N., Abdullah, S. M., & Mughal, Y. H. (2019). Transformational leadership style, followership, and factors of employees' reactions towards organizational change. *Journal of Asia Business Studies*.
- Byrne, B. M. (1994). *Structural equation modeling with EQS and EQS/Windows: Basic concepts, applications, and programming*. Sage.
- Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*, 1(1), 55–86.
- Byrne, B. M. (2013). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Psychology Press.
- Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.
- Camelo-Ordaz, C., Garcia-Cruz, J., Sousa-Ginel, E., & Valle-Cabrera, R. (2011). The influence of human resource management on knowledge sharing and innovation in Spain: the mediating role of affective commitment. *The International Journal of Human Resource Management*, 22(07), 1442–1463.

- Carmeli, A., Atwater, L., & Levi, A. (2011). How leadership enhances employees' knowledge sharing: the intervening roles of relational and organizational identification. *The Journal of Technology Transfer*, 36(3), 257–274.
- Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2001). *Qualitative marketing research*. Sage.
- Castaneda, D. I., & Cuellar, S. (2020). Knowledge sharing and innovation: A systematic review. *Knowledge and Process Management*, 27(3), 159–173.
- Chaar, S. A. A., & Easa, N. F. (2020). Does transformational leadership matter for innovation in banks? The mediating role of knowledge sharing. *International Journal of Disruptive Innovation in Government*.
- Chan, I. Y., Liu, A. M., & Fellows, R. (2014). Role of leadership in fostering an innovation climate in construction firms. *Journal of Management in Engineering*, 30(6), 06014003.
- Chan, S. W., Ang, S. F., Andleeb, N., Ahmad, M. F., & Zaman, I. (2019). The influence of transformational leadership on organization innovation in Malaysian manufacturing industry. *International Journal of Supply Chain Management*, 8(2), 971–976.
- Chang, S. J., Witteloostuijn, A. V., & Eden, L. (2010). Common method variance in international business research". *Journal of International Business Studies*, 41(2), 178–184.
- Chang, S., & Lee, M. (2008). The linkage between knowledge accumulation capability and organizational innovation. *Journal of Knowledge Management*, 12(1), 3–20. doi:10.1108/13673270810852359

- Chang, W. J., Liao, S. H., & Wu, T. T. (2017). Relationships among organizational culture, knowledge sharing, and innovation capability: a case of the automobile industry in Taiwan. *Knowledge Management Research & Practice*, 15(3), 471–490.
- Chang, Y. Y., Chao, W. C., Chang, C. Y., & Chi, H. R. (2018). Transformational leadership influence on unit performance: Cross-level moderated mediation evidence. *Leadership & Organization Development Journal*.
- Chen, C., & Hung, S. (2010). To give or to receive? factors influencing members' knowledge sharing and community promotion in professional virtual communities. *Information & Management*, 47(4), 226–236. doi:10.1016/j.im.2010.03.001
- Chen, H., Baptista Nunes, M., Ragsdell, G., & An, X. (2018). Extrinsic and intrinsic motivation for experience grounded tacit knowledge sharing in chinese software organisations. *Journal of Knowledge Management*, 22(2), 478–498. doi:10.1108/JKM-03-2017-0101
- Chen, H., Nunes, M. B., Ragsdell, G., & An, X. (2018). Extrinsic and intrinsic motivation for experience grounded tacit knowledge sharing in Chinese software organisations. *Journal of Knowledge Management*.
- Chen, J. S., & Tsou, H. T. (2007). Information technology adoption for service innovation practices and competitive advantage: The case of financial firms. *Information Research: An International Electronic Journal*, 12(3), 3.
- Chen, M. Y., Lin, C. Y., Lin, H., & McDonough, E. F. (2012). Does transformational leadership facilitate technological innovation? the moderating roles of innovative culture and incentive compensation. *Asia Pacific Journal of Management*, 29(2), 239–264. doi:10.1007/s10490-012-9285-9

- Cheng, E. (2012). Knowledge strategies for enhancing school learning capacity. *International Journal of Educational Management*, 26(6), 577–592. doi:10.1108/09513541211251406
- Cheng, E. W. (2001). SEM being more effective than multiple regression in parsimonious model testing for management development research. *Journal of Management Development*, 20(7), 650–667.
- Cheung, M. F., & Wong, C. S. (2011). Transformational leadership, leader support, and employee creativity. *Leadership & Organization Development Journal*.
- Choi, B., & Lee, H. (2002). 'Knowledge management strategy and its link to knowledge creation process'. *Expert Systems with Applications*, 23(3), 173–187.
- Choi, P., Garcia, R., & Friedrich, C. (2010). The drivers for collective horizontal coopetition: a case study of screwcap initiatives in the international wine industry. *International Journal of Strategic Business Alliances*, 1(3), 271–290.
- Choi, S. B., Kim, K., Ullah, S. E., & Kang, S. W. (2016). How transformational leadership facilitates innovative behavior of Korean workers: Examining mediating and moderating processes. *Personnel Review*.
- Choi, Y., Yoon, D. J., & Kim, D. (2020). Leader behavioral integrity and employee in-role performance: The roles of coworker support and job autonomy. *International Journal of Environmental Research and Public Health*, 17(12), 1–14. doi:10.3390/ijerph17124303
- Chouikha, M. B., & Dakhli, S. (2012). 'The dimensions of knowledge sharing'. *Proceedings of the MCIS 2012, Mediterranean Conference on Information Systems*.

- Christensen, P. (2007). Knowledge sharing: moving away from the obsession with best practices. *Journal of Knowledge Management*, 11(1), 36–47.
- Chuang, C., Jackson, S. E., & Jiang, Y. (2016). Can knowledge-intensive teamwork be managed? examining the roles of HRM systems, leadership, and tacit knowledge. *Journal of Management*, 42(2), 524–554. doi:10.1177/0149206313478189
- Church, B. V., Williams, H. T., & Mar, J. C. (2019). Investigating skewness to understand gene expression heterogeneity in large patient cohorts. *BMC Bioinformatics*, 20(24), 1–14.
- Clayton, D. (2020). Knowledge management in events. Στο *The Routledge Handbook of Events* (σσ. 442–456). Routledge.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*.
- Collis, J., & Hussey, R. (2009). *Business research: A practical guide for undergraduate & postgraduate students* (3rd έκδ.). Palgrave Macmillan.
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007a). Trust, trustworthiness, and trust propensity: a meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4), 909–927.
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007b). Trust, trustworthiness, and trust propensity: a meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4), 909–927.
- Conklin, J. (1997). *Designing organizational memory: Preserving intellectual assests in a knowledge economy , from*. Ανακτήθηκε από <http://cognexus.org/dom.pdf>

- Connell, J., Ferres, N., & Travaglione, T. (2003). Engendering trust in manager-subordinate relationships: predictors and outcomes. *Personnel Review*, 32(5), 569–587.
- Connolly, T., & Thorn, B. K. (1990). 10. Discretionary databases: Theory, data, and implications. *Organizations and communication technology*, 219.
- Cook, J. D., & Wall, T. D. (1980). New work attitude measures of trust, organizational commitment, and personal need nonfulfillment". *Journal of Occupational Psychology*, 53, 39–52.
- Cook, S., D., Brown, J., & S. (1999). Bridging opistemologies: The generative dance between organizational knowledge and organizational knowing. *Organization Science*, 10(4), 381–400.
- Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation*, 10(1), 7.
- Covey, S. M. R. (2008). *The Speed of Trust*. New York: Fr.
- Covey, S. M., & Link, G. (2013). *Smart trust: The defining skill that transforms managers into leaders*. Simon and Schuster.
- Crawford, C., Gould, L., & Scott, R. (2003). Transformational leader as champion and techie: Implications for leadership educators. *Journal of Leadership Education*, 57–73.
- Daft, R. (1978). Organizational innovation. *Academy of Management Journal*, 21(2), 193–210.

- Daft, R. (1999). *Leadership: Theory and practice* U.S.A. Harcourt Brace College Publishers.
- Daft, R. L., & Pirola-Merlo, A. (2009). *The leadership experience (1st Asia (Pacific))*. South Melbourne, Australia: Cengage Learning.
- Damanpour, F., & Aravind, D. (2012). Managerial innovation: Conceptions, processes and antecedents. *Management and Organization Review*, 8(2), 423–454.
- Damanpour, F., & Gopalkrishnan, S. (2001). The dynamics of the product and process innovations in organizations. *Journal of Management Studies*, 38(1), 45–65.
- Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: effects of environment, organization and top managers 1. *British Journal of Management*, 17(3), 215–236.
- Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative effects of innovation types and organizational performance: A longitudinal study of service organizations. *Journal of Management Studies*, 46(4), 650–675.
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.
- Davis, J. H., Schoorman, F. D., Mayer, R. C., & Tan, H. H. (2000). The trusted general manager and business unit performance: Empirical evidence of a competitive advantage. *Strategic Management Journal*, 21(5), 563–576.
- Deschamps, J. P. (2005). Different leadership skills for different innovation strategies. *Strategy & Leadership*.
- Dietz, G., & Den Hartog, D. N. (2006). Measuring trust inside organisations. *Personnel Review*, 35(5), 557–588. doi:10.1108/00483480610682299

- Dirks, K. T. (2000). Trust in leadership and team performance: evidence from NCAA basketball. *Journal of Applied Psychology*, 85(6), 1004.
- Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: meta-analytic findings and implications for research and practice. *Journal of Applied Psychology*, 87(4), 611.
- Donate, M. J., & Guadamillas, F. (2011). Organizational factors to support knowledge management and innovation. *Journal of knowledge management*.
- Donate, M. J., & Pablo, J. D. S. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research*, 68(2), 360–370.
- Dong, Y., Bartol, K. M., Zhang, Z. X., & Li, C. (2017). Enhancing employee creativity via individual skill development and team knowledge sharing: Influences of dual-focused transformational leadership. *Journal of Organizational Behavior*, 38(3), 439–458.
- Dost, M., Pahi, M. H., Magsi, H. B., & Umrani, W. A. (2019). Effects of sources of knowledge on frugal innovation: moderating role of environmental turbulence. *Journal of Knowledge Management*.
- Dougherty, D., Munir, K., & Subramaniam, M. (2002). MANAGING TECHNOLOGY FLOWS IN PRACTICE: A GROUNDED THEORY OF SUSTAINED INNOVATION. *Academy of Management Proceedings (Vol, (1), 1–6*.
- Dovey, K. (2009). role of trust in innovation". *The Learning Organization*, 16(4), 311–325.
- Drucker, P. (2014). *Innovation and entrepreneurship*. Routledge.
- DuBrin, A. J. (2015). *Leadership: Research findings, practice, and skills*. Cengage Learning.

- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41(10), 1040.
- Easa, N. (2012). *Knowledge management and the SECI model: a study of innovation in the EGYPTIAN banking sector*. UNIVERSITY OF STIRLING.
- Egbu, C. O. (2004). *Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: an examination of critical success factors*. Engineering, Construction and Architectural Management.
- Ellis, K. (2003). K-span: Building a bridge between learning and knowledge management. *Training*, 40(10), 46–49.
- Elrehail, H., Emeagwali, O. L., Alsaad, A., & Alzghoul, A. (2018). The impact of transformational and authentic leadership on innovation in higher education: The contingent role of knowledge sharing. *Telematics and Informatics*, 35(1), 55–67. doi:10.1016/j.tele.2017.09.018
- Erdem, F., & Zen, J. (2003). Cognitive and affective dimensions of trust in developing Team performance. *Team Performance Management: An International Journal*, 9(5/6), 131–135.
- Erkutlu, H. (2008). The impact of transformational leadership on organizational and leadership effectiveness- the Turukish case. *Journal of Management Development*, 27(7), 708–726.
- Faems, D., Looy, B., & Debackere, K. (2005). Interorganizational collaboration and innovation: Toward a portfolio approach. *Journal of Product Innovation Management*, 22(3), 238–250.
- Fairholm, G. W. (1994). *Leadership and the culture of trust*. Greenwood Publishing Group.

- Farrukh, M., Ansari, N. Y., Raza, A., Meng, F., & Wang, H. (2021). High-performance work practices do much, but HERO does more: an empirical investigation of employees' innovative behavior from the hospitality industry. *European Journal of Innovation Management*.
- Fernandez, B., I, G. O. N. Z. A. L. E. Z., A., & Sabherwal, R. (2004). *Knowledge management: Challenges, solutions , and technologies*. New Jersey: Pearson Education, Inc.
- Ferraresi, A. A., Quandt, C. O., Santos, S. A., & Frega, J. R. (2012). Knowledge management and strategic orientation: Leveraging innovativeness and performance. *Journal of Knowledge Management*, 16(5), 688–701.
- Ferreira, J. J. M., Fernandes, C. I., Alves, H., & Raposo, M. L. (2015). Drivers of innovation strategies: Testing the tidd and bessant (2009) model. *Journal of Business Research*, 68(7), 1395–1403. doi:10.1016/j.jbusres.2015.01.021
- Fontana, A., & Musa, S. (2017). The impact of entrepreneurial leadership measurement validation on innovation management and its measurement validation. *International Journal of Innovation Science*, 9, 1.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Fosfuri, A., & Tribó, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *Omega*, 36(2), 173–187.
- Francis, D., & Bessant, J. (2005). Targeting innovation and implications for capability development". *Technovation*, 25(3), 171–183.

- Gallouj, F., & Savona, M. (2009). Innovation in services: a review of the debate and a research agenda. *Journal of Evolutionary Economics*, 19(2), 149–172.
- Gallup. (2020). *How coronavirus will change the 'next normal' workplace*".
- Gamble, J. R. (2020). Tacit vs explicit knowledge as antecedents for organizational change. *Journal of Organizational Change Management*, 33(6), 1123–1141. doi:10.1108/JOCM-04-2020-0121
- García-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research*, 65(7), 1040–1050.
- García-Morales, V. J., Llorens-Montes, F. J., & Verdú-Jover, A. J. (2006). Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship. *Industrial Management & Data Systems*.
- García-Morales, V. J., Lloréns-Montes, F. J., & Verdú-Jover, A. J. (2008). The effects of transformational leadership on organizational performance through knowledge and innovation. *British Journal of Management*, 19(4), 299–319.
- Garrido, M. J., & Camarero, C. (2010). Assessing the impact of organizational learning and innovation on performance in cultural organizations. *International Journal of Nonprofit and Voluntary Sector Marketing*, 15(3), 215–232.
- George, E., & Zakkariya, K. A. (2018). *Psychological empowerment and job satisfaction in the banking sector*. Springer.
- Ghuri, P., & Gronhaug, K. (2005). *Research Methods in Business Studies*. Harlow, FT/Prentice Hall.

- Gillespie, N. A., & Mann, L. (2004). Transformational leadership and shared values: The building blocks of trust. *Journal of Managerial Psychology*, 19(6), 588–607. doi:10.1108/02683940410551507
- Golipour, R., Gholamreza, J., Mirzaei, M. A., & Rosh, T. (2011). The impact of organizational trust on innovativeness at the Tehran oil refinery company. *African Journal of Business Management*, 5(7), 2660–2667.
- Gómez-Prado, R., Alvarez-Risco, A., Cuya-Velásquez, B. B., Anderson-Seminario, M. D. L. M., Del-Aguila-Arcentales, S., & Yáñez, J. A. (2022). Product Innovation, Market Intelligence and Pricing Capability as a Competitive Advantage in the International Performance of Startups: Case of Peru. *Sustainability*, 14(17), 10703.
- Goodwin, V. L., Whittington, J. L., Murray, B., & Nichols, T. (2011). Moderator or mediator? examining the role of trust in the transformational leadership paradigm. *Journal of Managerial Issues*, 23(4), 409–425.
- Gordon, & Scott, R. (2006). The role of interpersonal trust and vigilance in the process of entrepreneurial opportunity recognition using social networks. Στο L. M. Gillin (Επιμ.), *Regional Frontiers of Entrepreneurship Research* (σσ. 42–61). Melbourne, Unitec, Auckland: Swinburne University of Technology.
- Grant, R. M. (1996). 'Toward a knowledge-based theory of the firm'. *Strategic Management Journal*, 17(S2), 109–122.
- Gray, D. (2009). *Doing research in the real world* (2nd έκδ.). 2nd έκδ. London, SAGE publication ltd.

- Griffith, D. A., & Yalcinkaya, G. (2018). Global product launch: a perspective on past, present, and future research. Στο *Handbook of Research on New Product Development* (σσ. 267–288). Edward Elgar Publishing.
- Grobler, S. W., & Plessis, Y. (2016). Requisite leader behavioural competencies for sustainable organisational performance. *Acta Commercii*, 16(1), 1–8.
- Guay, R. P. (2013). The relationship between leader fit and transformational leadership. *Journal of Managerial Psychology*.
- Gumusluoğlu, L., & Ilsev, A. (2009). Transformational leadership and organizational innovation: The roles of internal and external support for innovation. *The Journal of Product Innovation Management*, 26(3), 264–277. doi:10.1111/j.1540-5885.2009.00657.x
- Gwin, C. (2003). *Sharing knowledge: innovations and remaining challenges*. World Bank Publications.
- Hage, J., Meeus, M., & Meeus, M. T. (Επιμ.). (2006). *Innovation, science, and institutional change: a research handbook*. Oxford University Press on Demand.
- Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (τ. 7). τ. 7.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Andover: Multivariate Data Analysis.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2006). *Multivariate data analysis*. Uppersaddle River.

- Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, 13(2).
- Hamel, G. (2006). The why, what, and how of management innovation. *Harvard Business Review*, 84(2), 72.
- Han, S. H., Seo, G., Yoon, S. W., & Yoon, D. Y. (2016). Transformational leadership and knowledge sharing: Mediating roles of employee's empowerment, commitment, and citizenship behaviors. *Journal of Workplace Learning*.
- Hartmann, A., & Dorée, A. (2015). Learning between projects: More than sending messages in bottles. *International Journal of Project Management*, 33(2), 341–351. doi:10.1016/j.ijproman.2014.07.006
- Hassan, M., Toyman, N. V., Semerciöz, F., & Aksel, I. (2012). Interpersonal trust and its role in organizations. *International Business Research*, 5(8), 33.
- He, W., Fang, Y., & Wei, K. (2009). The role of trust in promoting organizational knowledge seeking using knowledge management systems: An empirical investigation. *Journal of the American Society for Information Science and Technology*, 60(3), 526–537. doi:10.1002/asi.21006
- He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15(4), 481–494.
- Hendriks, P. (1999a). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2), 91–100.
- Hendriks, P. (1999b). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Journal of Knowledge Process Management*, 6(2), 91–100.

- Henriques, I., & Sadorsky, P. (2007). Environmental technical and administrative innovations in the Canadian manufacturing industry. *Business Strategy and the Environment*, 16(2), 119–132.
- Herkema, S. (2003). A complex adaptive perspective on learning within innovation projects. *The Learning Organization*, 10(6), 340–346.
- Herrmann, D., & Felfe, J. (2013). Moderators of the relationship between leadership style and employee creativity: The role of task novelty and personal initiative. *Creativity Research Journal*, 25(2), 172–181.
- Hislop, D. (2013). *Knowledge management in organisations: A critical introduction* (3rd έκδ.). UK: Oxford University Press.
- Hislop, D., Bosua, R., & Helms, R. (2018). *Knowledge management in organizations: A critical introduction*. Oxford university press.
- Hitam, N. A., & Mahamad, S. A. M. B. S. (2012). Knowledge sharing practice in private sectors: A software house perspective. *Journal of Advanced Computer Science and Technology Research*, 2, 1–9.
- Hogan, S. J., & Coote, L. V. (2014). Organizational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research*, 67(8), 1609–1621.
- Hogan, S. J., Soutar, G. N., McColl-Kennedy, J. R., & Sweeney, J. C. (2011). Reconceptualizing professional service firm innovation capability: Scale development. *Industrial Marketing Management*, 40(8), 1264–1273.
- Holmes, J. G., & Rempel, J. K. (1989). Trust in Close Relationships". Στο C. Hendrick (Επιμ.), *SAGE* (σσ. 187–220). Newbury Park.

- Holste, J. (2003). *A Study of the Effects of Affect-based Trust and Cognition-based Trust on Intraorganizational Knowledge Sharing and Use*, Doctoral dissertation, Tese de Doutorado em Filosofia em Liderança Organizacional (σ. 153). Virginia Beach: Regent University.
- Holtz, B. C., & Harold, C. M. (2008). When your boss says no! The effects of leadership style and trust on employee reactions to managerial explanations. *Journal of Occupational and Organizational Psychology*, 81(4), 777–802.
- Hooff, B., & Ridder, J. A. (2004). Knowledge sharing in context: The influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*, 8(6), 117–130. doi:10.1108/13673270410567675
- Hooff, B., Weenen, & Femke. (2004). Committed to share: Commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management*, 11(1), 13–24. doi:10.1002/kpm.187
- Hox, J. J. (2021). Confirmatory factor analysis. *The Encyclopedia of Research Methods in Criminology and Criminal Justice*, 2, 830–832.
- Hoyle, R. H. (2000). Confirmatory factor analysis. Στο *Handbook of applied multivariate statistics and mathematical modeling* (σσ. 465–497). Academic Press.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55.

- Hui, L., Phouvang, S., & Phong, L. B. (2018). Transformational leadership facilitates innovation capability: The mediating roles of interpersonal trust. *International Journal of Business Administration*, 9(3), 1–9.
- Humayun, M., & Gang, C. (2013). Impact of leadership support on KMS-based knowledge seeking behavior: Lessons learned. *Research Journal of Applied Sciences, Engineering and Technology*, 5(1), 218–223.
- Islam, M. A., Agarwal, N. K. K., & Ikeda, M. (2015). *Knowledge management for service innovation in academic libraries: A qualitative study*. Library Management.
- Islam, Z. M. (2010). The mediating effects of socialization on organizational contexts and knowledge sharing. *Journal of Knowledge Globalization*, 3(1), 31–48.
- Ismail, A., Mohamad, M., Mohamad, H., Rafiuddin, N., & Zhen, K. (2010). Transformational and transactional leadership styles as a predictor of individual outcomes. *Theoretical and Applied Economics*, 6(547), 89–104.
- Jain, K. K., Sandhu, M. S., & Goh, S. K. (2015). Organizational climate, trust and knowledge sharing: insights from Malaysia. *Journal of Asia Business Studies*, 9(1), 54–77.
- Jashapara, A. (2004). *Knowledge management: an integrated approach*. Harlow, England: Financial Times Prentice Hall.
- Jaskyte, K. (2004). Transformational leadership, organizational culture, and innovativeness in nonprofit organizations. *Nonprofit Management and Leadership*, 15(2), 153–168.
- Jaskyte, K. (2011). Predictors of administrative and technological innovations in nonprofit organizations. *Public Administration Review*, 71(1), 77–86.

- Javidan, M., Stahl, G. K., Brodbeck, F., & Wilderom, C. P. (2005). 'Cross-border transfer of knowledge: Cultural lessons from Project GLOBE'. *Academy of Management Perspectives*, 19(2), 59–76.
- Jensen, M., Potočník, K., & Chaudhry, S. (2020). A mixed-methods study of CEO transformational leadership and firm performance. *European Management Journal*, 38(6), 836–845.
- Jia, J., Liu, H., Chin, T., & Hu, D. (2018). The continuous mediating effects of GHRM on employees' green passion via transformational leadership and green creativity. *Sustainability*, 10(9), 3237.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4), 408–417.
- Jones, G. R., & George, J. M. (1998). The experience and evolution of trust: Implications for cooperation and teamwork. *Academy of Management Review*, 23(3), 531–546.
- Jong, J. P., & Den Hartog, D. N. (2007). Emerald Article: How leaders influence employees' innovative behaviour. *Innovation*, 10(1), 41–64.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: a meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755.
- Juliano, P. S., Marcelo, S. N., & O, C. A. S. (2010). Influence of the technological innovation degree on knowledge creation: Evidence from a Brazilian firm. *African Journal of Business Management*, 4(5), 631–643.
- Jung, D. I., & Avolio, B. J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior*, 21(8), 949–964.

- Jyoti, J., & Dev, M. (2015). The impact of transformational leadership on employee creativity: the role of learning orientation. *Journal of Asia Business Studies*.
- Kamaşak, R. f., & Bulutlar, F. (2010). The influence of knowledge sharing on innovation. *European Business Review*, 22(3), 306–317. doi:10.1108/09555341011040994
- Kang, M., & Lee, M. J. (2017). Absorptive capacity, knowledge sharing, and innovative behaviour of R&D employees. *Technology Analysis & Strategic Management*, 29(2), 219–232.
- Ke-Xin, B., De-hua, S., Ren-feng, Z., & Bai-zhou, L. (2006, Οκτώβριος). The construction of synergetic development system of product innovation and process innovation in manufacturing enterprises. *2006 International Conference on Management Science and Engineering*, 628–636. IEEE.
- Khan, R., Rehman, A. U., & Fatima, A. (2009). Transformational leadership and organizational innovation: Moderated by organizational size. *African Journal of Business Management*, 3(11), 678–684.
- Kim, J. N., & Rhee, Y. (2011). Strategic thinking about employee communication behavior (ECB) in public relations: testing the models of megaphoning and scouting effects in Korea". *Journal of Public Relations Research*, 23(3), 243–268.
- Kim, J., Lee, C., & Elias, T. (2015). Factors affecting information sharing in social networking sites amongst university students: Application of the knowledge-sharing model to social networking sites. *Online Information Review*.
- Kim, L., Nelson, R. R., & Nelson, R. R. (2000). *Technology, learning, and innovation: Experiences of newly industrializing economies*. Cambridge University Press.

- Kim, S. L., & Yun, S. (2015). The effect of coworker knowledge sharing on performance and its boundary conditions: An interactional perspective. *Journal of Applied Psychology, 100*(2), 575.
- Kim, S., & Ju, B. (2008). An analysis of faculty perceptions: Attitudes toward knowledge sharing and collaboration in an academic Institution. *Library and Information Science, 30*(4), 282–290.
- Kim, T. T., Lee, G., Paek, S., & Lee, S. (2013). Social capital, knowledge sharing and organizational performance: What structural relationship do they have in hotels? *International Journal of Contemporary Hospitality Management, 25*(5), 683–704.
doi:10.1108/IJCHM-Jan-2012-0010
- Kimmerle, J., Wodzicki, K., Jarodzka, H., & Cress, U. (2011). Value of information, behavioral guidelines, and social value orientation in an information-exchange dilemma. *Group Dynamics: Theory, Research, and Practice, 15*(2), 173.
- King, W. R., & Marks, P. V. (2008). Motivating knowledge sharing through a knowledge management system. *Omega (Oxford, 36*(1), 131–146.
doi:10.1016/j.omega.2005.10.006
- Kirkpatrick, S. A., & Locke, E. A. (1996). Direct and indirect effects of three core charismatic leadership components on performance and attitudes. *Journal of Applied Psychology, 81*, 36–5.
- Kleinbaum, D. G., & Klein, M. (2010). Maximum likelihood techniques: An overview. *Logistic regression, 103–127*.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.

- Kline, R. B. (2016). *Principles and Practice of Structural Equation Modeling* (4th έκδ.). 4th έκδ.
- Koch, P., & Hauknes, J. (2005). *On innovation in the public sector—today and beyond*.
- Kotter, J. (1990). *A force for change: How leadership differs from management* New York. Free press.
- Kouzes, J. M., & Posner, B. Z. (2008). It's Not Just the Leader's Vision. *Facilities Manager*, 24(4), 22–23.
- Kowalkowski, C., Gebauer, H., Kamp, B., & Parry, G. (2017). Servitization and deservitization: Overview, concepts, and definitions. *Industrial Marketing Management*, 60, 4–10.
- Kremer, H., Villamor, I., & Aguinis, H. (2019). Innovation leadership: Best-practice recommendations for promoting employee creativity, voice, and knowledge sharing. *Business Horizons*, 62(1), 65–74.
- Krogh, G., Nonaka, I., & Rechsteiner, L. (2012). Leadership in organizational knowledge creation: A review and framework. *Journal of Management Studies*, 49(1), 240–277.
- Kvale, S. (1994). *Interviews: An introduction to qualitative research interviewing*. Sage Publications, Inc.
- Kyriazos, T. A. (2018). Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. *Psychology*, 9(08), 2207.
- Lam, W. (2005). Successful knowledge management requires a knowledge culture: a case study. *Knowledge management research & practice*, 3(4), 206–217.

- Lambert, H., Gupte, J., Fletcher, H., Hammond, L., Lowe, N., Pelling, M., & Shanks, K. (2020). COVID19 as a global challenge: towards an inclusive and sustainable future". *The Lancet Planetary Health*, 4(8), 312–314.
- Laohavichien, T., Fredendall, L., & Cantrell, R. (2009). The effects of transformational and transactional leadership on quality improvement. *The Quality Management Journal* Vol. 16, (2), 7–24.
- Le, L. T. K., & Le, P. B. (2021). Improving the innovation performance for Vietnamese firm based on practices of idealized influence and individualized consideration: The mediating role of knowledge sharing. *International Journal of Business Administration*, 12(3), 75–85.
- Le, P. B., & Lei, H. (2017). How transformational leadership supports knowledge sharing: evidence from Chinese manufacturing and service firms. *Chinese Management Studies*, 11(3), 479–497.
- Le, P. B., & Lei, H. (2018a). The effects of innovation speed and quality on differentiation and low-cost competitive advantage: The case of Chinese firms. *Chinese Management Studies*.
- Le, P. B., & Lei, H. (2018b). The mediating role of trust in stimulating the relationship between transformational leadership and knowledge sharing processes. *Journal of Knowledge Management*.
- Le, P. B., & Lei, H. (2019). Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support. *Journal of Knowledge Management*.

- Le, P. B., Lei, H., & Than, T. S. (2018). How leadership and trust in leaders foster employees' behavior toward knowledge sharing". *Social Behavior and Personality: An International Journal*, 46(5), 705–720.
- Lee, C. C., & Yang, J. (2000). Knowledge value chain. *Journal of management development*.
- Lee, K. C., Lee, S., & Kang, I. W. (2005). KMPI: measuring knowledge management performance. *Information & Management*, 42(3), 469–482.
- Lee, V. H., Leong, L. Y., Hew, T. S., & Ooi, K. B. (2013). Knowledge management: a key determinant in advancing technological innovation? *Journal of knowledge management*.
- Lee, Y., Tao, W., Li, J.-Y. Q., & Sun, R. (2021). Enhancing employees' knowledge sharing through diversity-oriented leadership and strategic internal communication during the COVID-19 outbreak". *Journal of Knowledge Management*, 25(6), 1526–1549. doi:10.1108/JKM-06-2020-0483
- Legood, A., Werff, L., Lee, A., & Den Hartog, D. (2021). A meta-analysis of the role of trust in the leadership-performance relationship. *European Journal of Work and Organizational Psychology*, 30(1), 1–22.
- Lei, H., Nguyen, T. T., & Le, P. B. (2019). How knowledge sharing connects interpersonal trust and innovation capability: The moderating effect of leadership support. *Chinese Management Studies*, 13(2), 276–298. doi:10.1108/CMS-06-2018-0554
- Leithwood, K., & Jantzi, D. (2000). The effects of transformational leadership on organizational conditions and student engagement with school. *Journal of Educational Administration*, 38(2), 112–129. doi:10.1108/09578230010320064

- Lewicki, R. J., & Bunker, B. B. (1996). Developing and maintaining trust in work relationships. Στο R. M. Kramer & T. R. Tyler (Επιμ.), *Trust in organizations: Frontiers of theory and research* (σσ. 114–139). Thousand Oaks, CA, US: Sage Publications.
- Lewicki, R. J., & Stevenson, M. A. (1997). Trust development in negotiation: Proposed actions and a research agenda. *Business and Professional Ethics Journal*, 16(1/2/3), 99–132.
- Lewicki, R. J., Tomlinson, E. C., & Gillespie, N. (2006). Models of interpersonal trust development: Theoretical approaches, empirical evidence, and future directions. *Journal of Management*, 32(6), 991–1022.
- Liao, S. H., Chen, C. C., Hu, D. C., Chung, Y. C., & Liu, C. L. (2017). Assessing the influence of leadership style, organizational learning and organizational innovation. *Leadership & Organization Development Journal*, 38(5), 590–609.
- Liao, S. H., Fei, W. C., & Liu, C. T. (2008). Relationships between knowledge inertia, organizational learning and organization innovation. *Technovation*, 28(4), 183–195.
- Lichtenthaler, U., & Muethel, M. (2012). Retracted: The impact of family involvement on dynamic innovation capabilities: Evidence from German manufacturing firms. *Entrepreneurship Theory and Practice*, 36(6), 1235–1253.
- Limsila, K., & Ogunlana, S. O. (2008). Performance and leadership outcome correlates of leadership styles and subordinate commitment. *Engineering*.
- Lin, H. F. (2007). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower*.

- Lin, W. (2008). The exploration factors of affecting knowledge sharing – the case of Taiwan's high-tech industry. *Expert Systems with Applications*, 35(3), 661–676. doi:10.1016/j.eswa.2007.07.038
- Lin, X. (2019). Review of Knowledge and Knowledge Management Research. *American Journal of Industrial and Business Management*, 9(09).
- Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1), 114.
- Ling, T. C., & Nasurdin, A. M. (2010). Human resource management practices and organizational innovation: An empirical study in Malaysia. *Journal of Applied Business Research (JABR)*, 26(4).
- Little, R. J., & Rubin, D. B. (2019). *Statistical analysis with missing data* (t. 793). John Wiley & Sons.
- Loon, M., Mee Lim, Y., Heang Lee, T., & Lian Tam, C. (2012). Transformational leadership and job-related learning. *Management Research Review*, 35(3/4), 192–205. doi:10.1108/01409171211210118
- Lopez-Saez, P., Jose, E. N., Martín-de-Castro, G., & Cruz-Gonzalez, J. (2010). External knowledge acquisition processes in knowledge-intensive clusters. *Journal of Knowledge Management*, 14(5), 690–707.
- Lune, H., & Berg, B. L. (2017). *Qualitative research methods for the social sciences (Ninth (Global). Global. Pearson.*
- Lynch, M. (2012). *A guide to effective school leadership theories* (1st ed.). Routledge). 1st ed.). Routledge. doi:10.4324/9780203181010

- Lyu, S. C., & Ferrin, D. L. (2018). Determinants, consequences and functions of interpersonal trust within organizations: What is the empirical evidence? Στο *The Routledge companion to trust* (σσ. 65–104).
- Ma, J., Schaubroeck, J. M., & LeBlanc, C. (2019). Interpersonal trust in organizations. Στο *Oxford Research Encyclopedia of Business and Management*.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological methods*, 4(1), 84.
- Macfarlane, B. (2010). *Researching with integrity: The ethics of academic enquiry*. Routledge.
- Mahdikhani, M., & Yazdani, B. (2020). Transformational leadership and service quality in e-commerce businesses: The role of trust and team performance. *International Journal of Law and Management*, 62(1), 23–46. doi:10.1108/IJLMA-12-2018-0290
- Mansury, M. A., & Love, J. H. (2008). Innovation, productivity and growth in US business services: A firm-level analysis. *Technovation*, 28(1–2), 52–62.
- Maravilhas, S., & Martins, J. (2019). Strategic knowledge management in a digital environment: Tacit and explicit knowledge in Fab Labs. *Journal of Business Research*, 94, 353–359.
- Martins, E., & Martins, N. (2002). An organisational culture model to promote creativity and innovation". *SA Journal of Industrial Psychology*, 28(4), 58–65.
- Masa'deh, R., Obeidat, Y., B., & Tarhini, A. (2016). A Jordanian empirical study of the associations among transformational leadership, transactional leadership, knowledge sharing, job performance, and firm performance A structural equation modelling approach. *Journal of Management Development*, 35(5), 681–705.

- Masrek, M. N., Noordin, S. A., Anwar, N., & Idris, A. S. A. (2011). The Relationship between cultural identity and individual knowledge sharing behavior. *IBIMA Business Review*.
- Massa, S., & Tsesta, S. (2009). A knowledge management approach to organisational competitive advantage: Evidence from the food sector. *European Management Journal*, 27, 129–141.
- Mathew, V., & Kavitha, M. (2008). The critical knowledge transfer in an organization: Approaches. *ICFAI Journal of Knowledge Management*, 6(4), 25–39.
- Matzler, K., Schwarz, E., Deutinger, N., & Harms, R. (2008). The relationship between transformational leadership, product innovation and performance in SMEs. *Journal of Small Business & Entrepreneurship*, 21(2), 139–151.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20(3), 709–734.
- Maylor, H., Blackmon, K., & Huemann, M. (2017). *Researching business and management*. Bloomsbury Publishing.
- McAdam, R., & Reid, R. (2000). A comparison of public and private sector perceptions and use of knowledge management. *Journal of European Industrial Training*, 24(6), 317–329.
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38(1), 24–59.
- McCleskey, J. A. (2014). Situational, transformational, and transactional leadership and leadership development. *Journal of Business Studies Quarterly*, 5(4), 117.

- McDonald, R. P., & Ho, M. H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological methods*, 7(1), 64.
- Mearns, M. (2012). Knowing what knowledge to share: Collaboration for community, research and wildlife. *Expert Systems with Applications*, 39(10), 9892–9898.
- Mehrabani, S. E., & Shajari, M. (2012). Knowledge management and innovation capacity. *Management Research*, 4(2), 164.
- Meng, Y. (2016). Spiritual leadership at the workplace: Perspectives and theories. *Biomedical Reports*, 5(4), 408–412.
- Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, 34(1), 63–73.
- Mertens, Donna. (2019). Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods 5th edition.
- Michaelis, B., Stegmaier, R., & Sonntag, K. (2010). Shedding light on followers' innovation implementation behavior: The role of transformational leadership, commitment to change, and climate for initiative. *Journal of Managerial Psychology*.
- Mikalef, P., & Krogstie, J. (2020). Examining the interplay between big data analytics and contextual factors in driving process innovation capabilities. *European Journal of Information Systems*, 29(3), 260–287.
- Minbaeva, D. B. (2013). Strategic HRM in building micro-foundations of organizational knowledge-based performance. *Human Resource Management Review*, 23(4), 378–390.

- Mishra, A. K. (1996). Organizational responses to crisis. *Trust in Organizations: Frontiers of Theory and Research*, 261.
- Mittal, S., & Dhar, R. L. (2015). *Transformational leadership and employee creativity: mediating role of creative self-efficacy and moderating role of knowledge sharing*. Management Decision.
- Mohajan, H. K. (2019). Knowledge sharing among employees in organizations. *Journal of Economic Development, Environment and People*, 8(1), 52–61.
- Mohammad, S., Al-Zeaus, H., & Batayneh, A. (2011). The relationship between transformational leadership and employees' satisfaction at Jordanian private hospitals. *Business and Economic Horizons*, 5(2), 35–46.
- Moosmayer, D. C., & Koehn, A. (2011). 'The moderating role of managers' uncertainty avoidance values on the performance impact of radical and incremental innovation'. *International Journal of Business Research*, 11(6), 32–39.
- Mulder, L. B., Verboon, P., & Cremer, D. (2009). Sanctions and moral judgments: The moderating effect of sanction severity and trust in authorities. *European Journal of Social Psychology*, 39(2), 255–269. doi:10.1002/ejsp.506
- Murovec, N., & Prodan, I. (2008). The influence of organizational absorptive capacity on product and process innovation. *Organizacija*, 41(2).
- Murphy, J. T. (2002). Networks, trust, and innovation in Tanzania's manufacturing sector. *World Development*, 30(4), 591–619.
- Myung, I. J. (2003). Tutorial on maximum likelihood estimation. *Journal of Mathematical Psychology*, 47(1), 90–100.

- Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). *Applied linear statistical models*. Chicago: Irwin.
- Nguyen, H. N., & Mohamed, S. (2011). Leadership behaviors, organizational culture and knowledge management practices: An empirical investigation. *Journal of Management Development*, 30(2), 206–221.
- Nguyen, T. T., Mia, L., Winata, L., & Chong, V. K. (2017). Effect of transformational-leadership style and management control system on managerial performance. *Journal of Business Research*, 70, 202–213.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14–37.
- Nonaka, I., & Krogh, G. v. (2009). *Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory* (τ. 20, σσ. 635–652). doi:10.1287/orsc.1080.0412.
- Nonaka, I., & Toyama, R. (2005). The theory of the knowledge-creating firm: Subjectivity, objectivity and synthesis. *Industrial and Corporate Change*, 14(3), 419–436.
- Nonaka, I., Krogh, G., & Voelpel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, 27(8), 1179–1208.
- Nooteboom, B. (2003). Learning to Trust. *Paper for Symposium La structure cognitive de la confiance, Ecole des Hautes Etudes en Sciences Sociales*. Paris.
- Northouse, P. (2007). *Leadership, Theory and practice*. California, Sage publication: Inc.
- Northouse, P. (2012). *Introduction to leadership: Concepts and practice* (2nd έκδ.). Los Angeles SAGE Publication.

- Northouse, P. G. (2021). *Leadership: Theory and practice*. Sage publications.
- Nunnally, J. C. (1967). Ira. H. Bernstein,"McGraw-Hill series in psychology. Στο *Psychometric theory*. New York, NY, US: McGraw-Hill.
- Nurahmad, N., Hermanto, H., & Nurmayanti, S. (2022). The Effect of Transformational Leadership on Innovative Work Behavior with Knowledge Sharing as a Mediation Variable. *International Journal of Multicultural and Multireligious Understanding*, 9(6), 376–387.
- Nusair, N., Ababneh, R., & Bae, Y. K. (2012). The impact of transformational leadership style on innovation as perceived by public employees in Jordan. *International Journal of Commerce and Management*.
- Nyhan, R. C. (2000). Changing the Paradigm: Trust and its Role in Public Sector Organizations. *The American Review of Public Administration*, 30(1), 87–109. doi:10.1177/02750740022064560
- Nystrom, H. (1990). *Technological and market innovation: Strategies for product and company development London*. John Wiley & Sons Limited.
- O.e.c.d. (2009). *Measuring innovation in education and training*. Ανακτήθηκε από <http://www.oecd.org/edu/ceri/43787562.pdf>
- O.e.c.d. (2021). Education at a Glance 2021. *OECD*. Ανακτήθηκε από https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3.pdf
- O’Leary-Kelly, S. W., & Vokurka, R. J. (1998). The empirical assessment of construct validity. *Journal of Operations Management*, 16(4), 387–405.
- Oke, A., Munshi, N., & Walumbwa, F. O. (2009). The influence of leadership on innovation processes and activities. *Organizational Dynamics*, 38(1), 64–72.

- Omerzel, D. G., Biloslavo, R., & Trnavcevic, A. (2011). Knowledge management and organisational culture in higher education institutions. *Journal for East European Management Studies*, 16, 2.
- Ooi, K. B., Lin, B., Teh, P. L., & Chong, A. Y. L. (2012). Does TQM support innovation performance in Malaysia's manufacturing industry? *Journal of Business Economics and Management*, 13(2), 366–393.
- Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*. Routledge.
- Panahi, S., Watson, J., & Partridge, H. (2016). Conceptualising social media support for tacit knowledge sharing: Physicians' perspectives and experiences. *Journal of Knowledge Management*, 20(2), 344–363. doi:10.1108/JKM-06-2015-0229.
- Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. *Academic Medicine*, 95(5), 690–694.
- Patten, M. L. (2017). *Understanding research methods: An overview of the essentials*. Routledge.
- Pee, L. G., & Min, J. (2017). Employees' online knowledge sharing: The effects of person-environment fit. *Journal of Knowledge Management*, 21(2), 432–453. doi:10.1108/JKM-10-2016-0437
- Peng, J., Chen, X., Zou, Y., & Nie, Q. (2021). Environmentally specific transformational leadership and team pro-environmental behaviors: The roles of pro-environmental goal clarity, pro-environmental harmonious passion, and power distance. *Human Relations*, 74(11), 1864–1888.

- Perri. (1993). Innovation by nonprofit organizations: Policy and research issues. *Nonprofit Management and Leadership*, 3(4), 397–414.
- Perry, R. W. (2004). The relationship of affective organizational commitment with supervisory trust. *Review of Public Personnel Administration*, 24(2), 133–149. doi:10.1177/0734371X03262452
- Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. sage.
- Phong, L. B., Hui, L., & Son, T. T. (2018). How leadership and trust in leaders foster employees' behavior toward knowledge sharing. *Social Behavior and Personality: An International Journal*, 46(5), 705–720.
- Phung, V. D., Hawryszkiewicz, I., & Chandran, D. (2019). How knowledge sharing leads to innovative work behaviour: A moderating role of transformational leadership. *Journal of Systems and Information Technology*, 21(3), 277–303.
- Pianta, M. (2005). Innovation and employment. Στο J. Fagerberg, D. C. Mowery, & R. R. Nelson (Επιμ.), *Handbook of Innovation* (σσ. 568-598 ,). New York: Oxford University Press.
- Pieterse, A. N., Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, 31(4), 609–623.
- Pitt, C. A. (2007). *Leading innovation and entrepreneurship: an action research study in the Australian red meat industry*.
- Podrug, N., Filipović, D., & Kovač, M. (2017). Knowledge sharing and firm innovation capability in Croatian ICT companies. *International Journal of Manpower*.

- Podsakoff, P. M., MacKenzie, S. B., & Bommer, W. H. (1996). Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *Journal of Management*, 22(2), 259–298.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual review of psychology*, 63, 539–569.
- Polanyi, M. (1967). *The tacit dimensions*. London: Routledge and Keon Paul.
- Politis, J. D. (2001). The relationship of various leadership styles to knowledge management. *Leadership & Organization Development Journal*, 22(8), 354–364.
- Porter, M. E., & Solvell, O. (1998). *The role of geography in the process of innovation and sustainable competitive advantage of firms*.
- Prasad, B., & Junni, P. (2016). *CEO transformational and transactional leadership and organizational innovation: The moderating role of environmental dynamism*. Management Decision.
- Pullen, A., Weerd-Nederhof, P. C., Groen, A. J., & Fisscher, O. A. (2012). SME network characteristics vs. product innovativeness: how to achieve high innovation performance. *Creativity and Innovation Management*, 21(2), 130–146.
- Rafferty, A., & Griffin, M. (2004). Dimensions of transformational leadership: Conceptual and empirical extension. *The Leadership Quarterly*, 15(3), 329–354.
- Rajabion, L., Mokhtari, A. S., Khordehbinan, M. W., Zare, M., & Hassani, A. (2019). The role of knowledge sharing in supply chain success: Literature review, classification and current trends. *Journal of Engineering*.

- Rajesh, R. (2021). Flexible business strategies to enhance resilience in manufacturing supply chains: an empirical study". *Journal of Manufacturing Systems*, 60, 903–919.
- Rasheed, M. A., Shahzad, K., & Nadeem, S. (2021). Transformational leadership and employee voice for product and process innovation in SMEs. *Innovation & Management Review*, 18(1), 69–89. doi:10.1108/INMR-01-2020-0007
- Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement*, 21(2), 173–184.
- Rehman, S. U., Ashfaq, K., Bresciani, S., Giacosa, E., & Mueller, J. (2021). Nexus among intellectual capital, interorganizational learning, industrial Internet of things technology and innovation performance: a resource-based perspective. *Journal of Intellectual Capital*.
- Reisinger, Y., & Mavondo, F. (2007). Structural equation modeling: Critical issues and new developments. *Journal of Travel & Tourism Marketing*, 21(4), 41–71.
- Renzl, B. (2008). Trust in management and knowledge sharing: The mediating effects of fear and knowledge documentation. *Omega*, 36(2), 206–220.
- Rhee, Y. W., & Choi, J. N. (2017). Knowledge management behavior and individual creativity: Goal orientations as antecedents and in-group social status as moderating contingency. *Journal of Organizational Behavior*, 38(6), 813–832.
- Ritala, P., & Hurmelinna-Laukkanen, P. (2013). Incremental and radical innovation in coopetition—The role of absorptive capacity and appropriability. *Journal of Product Innovation Management*, 30(1), 154–169.
- Robbins, S. P., & Coulter, M. (2005). *Management* (eight). eight. Data status, Belgrade.

- Robinson, S. L. (1996). Trust and Breach of the Psychological Contract. *Administrative Science Quarterly*, 40, 574–575.
- Rodan, S., & Galunic, C. (2004). More than network structure: How knowledge heterogeneity influences managerial performance and innovativeness. *Strategic Management Journal*, 25(6), 541–562.
- Rönkkö, M., & Cho, E. (2022). An updated guideline for assessing discriminant validity. *Organizational Research Methods*, 25(1), 6–14.
- Rosari, R. (2019). LEADERSHIP DEFINITIONS APPLICATIONS FOR LECTURERS'LEADERSHIP DEVELOPMENT. *Journal of Leadership in Organizations*, 1(1).
- Rui, C., Emerson, M., & Luis, L. (2010). Transformational leadership and TQM implementation. *Advances in Management*, 3(6), 7–18.
- Sadeghi, A., & Rad, F. (2018). The role of knowledge-oriented leadership in knowledge management and innovation. *Management Science Letters*, 8(3), 151–160.
- Saenz, H. (2011). Transformational leadership (pp.299-310. Στο A. Bryman, D. Collinson, K. Grint, B. Jackson, & M. Bien (Επιμ.), *The SAGE handbook of leadership*. London: SAGE Publications Ltd.
- Saleem, F., Zhang, Y. Z., Gopinath, C., & Adeel, A. (2020). Impact of servant leadership on performance: The mediating role of affective and cognitive trust. *Sage Open*, 10(1), 2158244019900562.
- Salo, N. (2009). The implications of knowledge management sustainability for leadership in an organization: an exploration and analysis of leadership theories and

- knowledge management practices in Bangwita Flores, Indonesia. *Journal of NTT Studies*, 1(2), 95–135.
- Sardar, Z. (2020). The smog of ignorance: Knowledge and wisdom in postnormal times. *Futures*, 120, 102554.
- Sarkheyli, A., Alias, R. A., Ithnin, N., & Esfahani, M. D. (2013). 'Dimensions of knowledge sharing quality: an empirical investigation'. *J. Res. Innov. Inf. Syst*, 3, 9–18.
- Sarros, C., J., C., K, B., & Santora, J. C. (2008). 'Building a climate for innovation through transformational leadership and organizational culture'. *Journal of Leadership & Organizational Studies*, 15(2), 145–158.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (Eighth). Eighth. Pearson.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.
- Schaubroeck, J., Lam, S. S. K., & Peng, A. C. (2011). Cognition-based and affect-based trust as mediators of leader behavior influences on team performance. *Journal of Applied Psychology*, 96(4), 863–871. doi:10.1037/a0022625
- Schermerhorn, J. R. (2008). *Management* (9th έκδ.). New York, Danvers: John Wiley & Sons.
- Schilling, M. A. (2010). *Management of Technological Innovation*. Tata McGraw-Hill Education.
- Schmuck, R., & Benke, M. (2020). An overview of innovation strategies and the case of Alibaba. *Procedia Manufacturing*, 51, 1259–1266.

- Schoenherr, T., Griffith, D. A., & Chandra, A. (2014). Knowledge management in supply chains: The role of explicit and tacit knowledge. *Journal of Business Logistics*, 35(2), 121–135. doi:10.1111/jbl.12042
- Schreiber, J. B. (2017). Update to core reporting practices in structural equation modeling. *Research in social and administrative pharmacy*, 13(3), 634–643.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 323–338.
- Schuhmacher, M. C., Kuester, S., & Hultink, E. J. (2018). A appetizer or Main Course: Early Market vs. Majority Market Go-to-Market Strategies for Radical Innovations. *Journal of Product Innovation Management*, 35(1), 106–124.
- Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*.
- Schumpeter, J. A. (1983). *The theory of economic development*, New Jersey. New Brunswick, Transaction Publishers.
- Schumpeter, J. A., Clemence, R. V., & Swedberg, R. (2017). *Essays: On entrepreneurs, innovations, business cycles, and the evolution of capitalism*. Routledge.
- Sekaran, U., & Bougie, R. (2019). *Research Methods for Business: A Skill Building Approach*. Jhon Wiley and Sons Ltd: United Kingdom.
- Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. Currency.

- Shafi, M., Lei, Z., Song, X., & Sarker, M. N. I. (2020). The effects of transformational leadership on employee creativity: Moderating role of intrinsic motivation. *Asia Pacific Management Review*, 25(3), 166–176.
- Shah, S. H. A., Sultana, A., Gul, A., Sajjad, S., Aziz, S., Basit, A., & Qadir, A. (2020). Transformational leadership influence on innovation directly and indirectly through affective commitment in hotel industry of Malaysia. *International Review of Management and Marketing*, 10(6), 22.
- Shakibaei, S., Jong, G. C., Alp€okin, P., & Rashidi, T. H. (2021). Impact of the COVID-19 pandemic on travel behavior in Istanbul: a panel data analysis”. *Sustainable Cities and Society*, 65, 102619.
- Shazi, R., Gillespie, N., & Steen, J. (2015). Trust as a predictor of innovation network ties in project teams. *International Journal of Project Management*, 33(1), 81–91.
- Shi, X. (2010). *Knowledge Management in China and in Finland-A cross country comparison*.
- Silva, A. (2016). What is leadership? *Journal of Business Studies Quarterly*, 8(1), 1–5.
Ανακτήθηκε από <https://www.proquest.com/scholarly-journals/what-is-leadership/docview/1831706711/se-2>.
- Simonin, B. L. (1999). ‘Ambiguity and the process of knowledge transfer in strategic alliances’. *Strategic Management Journal*, 20(7), 595–623.
- Six, F. E. (2007). Building interpersonal trust within organizations: a relational signalling perspective. *Journal of Management & Governance*, 11(3), 285–309.

- Škerlavaj, M., Song, J. H., & Lee, Y. (2010). Organizational learning culture, innovative culture and innovations in South Korean firms. *Expert Systems with Applications*, 37(9), 6390–6403.
- Skogstad, A., Hetland, J., Glasø, L., & Einarsen, S. (2014). Is avoidant leadership a root cause of subordinate stress? longitudinal relationships between laissez-faire leadership and role ambiguity. *Work and Stress*, 28(4), 323–341. doi:10.1080/02678373.2014.957362.
- Smith, D. (2015). *EBOOK: Exploring Innovation*. McGraw Hill.
- Sohail, M. S., & Daud, S. (2009). Knowledge sharing in higher education institutions: Perspectives from malaysia. *VINE. Very Informal Newsletter on Library Automation*, 39(2), 125. doi:10.1108/03055720910988841
- Sohail, M., & Daud, S. (2009). Knowledge sharing in higher education institutions - perspectives from Malaysia. *The Journal of Information and Knowledge Management Systems*, 39(2), 125–142.
- Sorescu, A. B., & Spanjol, J. (2008). Innovation's effect on firm value and risk: Insights from consumer packaged goods. *Journal of Marketing*, 72(2), 114–132.
- Sposito, V. A., Hand, M. L., & Skarpness, B. (1983). On the efficiency of using the sample kurtosis in selecting optimal lpestimators. *Communications in Statistics-Simulation and Computation*, 12(3), 265–272.
- Staples, D. S. (2001). A study of remote workers and their differences from non-remote". *Journal of End User Computing*, 13(2), 3–14.

- Statistics, J. (2021). *Annual Employment and unemployment Survey by Jordanian department of statistics*. Ανακτήθηκε από <http://dosweb.dos.gov.jo/population/woman-statistics/>
- Stogdill, R. M. (1974). *Handbook of leadership: A survey of theory and research*. Free Press.
- Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, 48(3), 450–463.
- Suifan, T. S., & Al-Janini, M. (2017). The relationship between transformational leadership and employees' creativity in the jordanian banking sector. *International Review of Management and Marketing*, 7(2), 284–292.
- Sunarsi, D., Paramarta, V., Munawaroh, A. R., Bagaskoro, J. N., & Evalina, J. (2021). Effect of transformational, transactional leadership and job satisfaction: evidence from information technology industries. *Information Technology In Industry*, 9(1), 987–996.
- Tan, N., Lye, Y., Ng, T., & Lim, Y. (2010). Motivational factors in influencing knowledge sharing among Banks in Malaysia. *International Research Journal of Finance and Economics*, 44, 191–201.
- Teece, D. J. (2008). *Technological know-how, organizational capabilities, and strategic management: business strategy and enterprise development in competitive environments*. World Scientific.
- Thakur, V. (2021). Framework for PESTEL dimensions of sustainable healthcare waste management: learnings from COVID-19 outbreak". *Journal of Cleaner Production*, 287, 125562.

- Tidd, J., & Bessant, J. (2018). Innovation management challenges: From fads to fundamentals. *International Journal of Innovation Management*, 22(05), 1840007.
- Trkman, P., Mertens, W., Viaene, S., & Gemmel, P. (2015). From business process management to customer process management. *Business Process Management Journal*.
- Trott, P. (2008). *Innovation management and new product development* (4th έκδ.). 4th έκδ. London, Prentic Hall.
- Trung, N. N., Nghi, P. T., Soldier, L. L., Hoi, T. V., & Kim, W. J. (2014). Leadership, resource and organisational innovation: Findings from state and non-state enterprises. *International Journal of Innovation Management*, 18(05), 1450034.
- Tsai, C. T., Huang, K. L., & Kao, C. F. (2001). The relationships among organizational factors, creativity of organizational members and innovation capability. *Journal of Management*, 18(4), 527–566.
- Tucker, L. R., & Lewis, C. (1973). The reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1–10.
- Tulshyan, R. (2020). How to Be an Inclusive Leader Through a Crisis. *Harvard Business Review*. Ανακτήθηκε από <https://hbr.org/2020/04/how-to-be-an-inclusive-leader-through-a-crisis>
- Uddin, M. A., Fan, L., & Das, A. K. (2017). A study of the impact of transformational leadership, organizational learning, and knowledge management on organizational innovation. *Management Dynamics*, 16(2), 42–54.

- Ugwu, C. I., & Ekere, J. N. (2018). The role of knowledge management in providing innovative services in university libraries in Nigeria: A structural equation modeling approach. *Global Knowledge, Memory and Communication*.
- Un, C. A., Cuervo-Cazurra, A., & Asakawa, K. (2010). R&D collaborations and product innovation. *Journal of Product Innovation Management*, 27(5), 673–689.
- Uriarte, F. (2008). *Introduction to knowledge management, available on*. Ανακτήθηκε από www.aseanfoundation.org/knowledge_management_book.pdf
- Usmanova, N., Yang, J., Sumarliah, E., Khan, S. U., & Khan, S. Z. (2020). Impact of knowledge sharing on job satisfaction and innovative work behavior: the moderating role of motivating language. *VINE Journal of Information and Knowledge Management Systems*, 51(3), 515–532.
- Ussahawanitchakit, P. (2012). ORGANIZATIONAL LEARNING, ADMINISTRATIVE INNOVATION, TECHNICAL INNOVATION, AND COMPETITIVE ADVANTAGE: EVIDENCE FROM ELECTRONICS BUSINESSES IN THAILAND. *Journal of International Management Studies*, 12(1).
- Usunier, J.-C. (1998). *International and cross-cultural management research*. Sage.
- Vaccaro, I. G., Jansen, J. J., Den Bosch, F. A., & Volberda, H. W. (2012). Management innovation and leadership: The moderating role of organizational size. *Journal of Management Studies*, 49(1), 28–51.
- VandeWalle, D., & Cummings, L. L. (1997). A test of the influence of goal orientation on the feedback-seeking process. *Journal of Applied Psychology*, 82(3), 390.

- Varis, M., & Littunen, H. (2010). Types of innovation, sources of information and performance in entrepreneurial SMEs. *European Journal of Innovation Management*, 13(2), 128–154.
- Verona, G., Prandelli, E., & Sawhney, M. (2006). Innovation and virtual environments: Towards virtual knowledge brokers. *Organization Studies*, 27(6), 765–788.
- Vicente-Lorente, J. D., & Zúñiga-Vicente, J. Á. (2012). Effects of process and product-oriented innovations on employee downsizing. *International Journal of Manpower*.
- Walker, R. (2007). An empirical evaluation of innovation types and organizational and environmental characteristics: Towards a configuration framework. *Journal of Public Administration Research and Theory*, 18(4), 591–615.
- Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*.
- Wang, J., Yang, J., & Xue, Y. (2017). Subjective well-being, knowledge sharing and individual innovation behavior: The moderating role of absorptive capacity. *Leadership & Organization Development Journal*.
- Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, 20(2), 115–131. doi:10.1016/j.hrmr.2009.10.001
- Wang, S., Tomlinson, E. C., & Noe, R. A. (2010). The role of mentor trust and protégé internal locus of control in formal mentoring relationships". *Journal of Applied Psychology*, 95(2), 358-367,. doi:10.1037/a0017663

- Wang, Z., & Wang, N. (2012). Knowledge sharing, innovation and firm performance. *Expert Systems with Applications*, 39(10), 8899–8908.
- Wang, Z., Sharma, P. N., & Cao, J. (2016). From knowledge sharing to firm performance: a predictive model comparison". *Journal of Business Research*, 69(10), 4650–4658.
- Weinberg, S. L., & Abramowitz, S. K. (2008). *Statistics using SPSS: An integrative approach*. Cambridge University Press.
- Weiss, L. M. (1999). Collection and connection: The anatomy of knowledge sharing in professional service firms. *Academy of Management Proceedings (Vol, (1), 1–6*.
- White, S. C., & Glickman, T. S. (2007). Innovation in higher education: Implications for the future. *New Directions for Higher Education*, 2007(137), 97–105.
- Willem, A., & Buelens, M. (2007). Knowledge sharing in public sector organizations: The effect of organizational characteristics on interdepartmental knowledge sharing. *Journal of Public Administration Research and Theory*, 17(4), 581–606.
- Witherspoon, C. L., Bergner, J., Cockrell, C., & Stone, D. N. (2013). 'Antecedents of organizational knowledge sharing: a meta-analysis and critique'. *Journal of knowledge management*.
- Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, 73(6), 913–934.
- Wong, P. K., & He, Z. L. (2003). The moderating effect of a firm's internal climate for innovation on the impact of public R&D support programs. *International Journal of Entrepreneurship and Innovation Management*, 3(5/6), 525–545.

- Wu, C. F. (2016). The relationship between business ethics diffusion, knowledge sharing and service innovation". *Management Decision*, 54(6), 1343–1358.
- Wu, W. L., Lin, C. H., Hsu, B. F., & Yeh, R. S. (2009). Interpersonal trust and knowledge sharing: Moderating effects of individual altruism and a social interaction environment. *Social Behavior and Personality: An International Journal*, 37(1), 83–93.
- Xiao, M., & Cooke, F. L. (2019). Why and when knowledge hiding in the workplace is harmful: a review of the literature and directions for future research in the Chinese context. *Asia Pacific Journal of Human Resources*, 57(4), 470–502.
- Xiao, Y., Zhang, X., & Pablos, P. O. (2017). How does individuals' exchange orientation moderate the relationship between transformational leadership and knowledge sharing? *Journal of Knowledge Management*.
- Xiong, S., & Deng, H. (2008). *Critical success factors for effective knowledge sharing in Chinese joint ventures 19th Australasian Conference on information systems, 3-5 December* (σσ. 1089–1098). σσ. 1089–1098. Christchurch, New Zealand.
- Yadav, M., Choudhary, S., & Jain, S. (2019). Transformational leadership and knowledge sharing behavior in freelancers. *Strategic Outsourcing*, 12(2), 202–224. doi:10.1108/JGOSS-08-2017-0030
- Yammarino, F. J., & Bass, B. M. (1990). *Long-term forecasting of transformational leadership and its effects among naval officers: Some preliminary findings*. Leadership Library of America.
- Yang, C., & Chen, L. (2007). Can organizational knowledge capabilities affect knowledge sharing behavior? *Journal of Information Science*, 33(1), 95–109.

- Yang, H., & Yang, J. (2019). The effects of transformational leadership, competitive intensity and technological innovation on performance. *Technology Analysis & Strategic Management*, 31(3), 292–305. doi:10.1080/09537325.2018.1498475
- Yang, J. (2010). The knowledge management strategy and its effect on firm performance: A contingency analysis. *International Journal of Production Economics*, 125(2), 215–223.
- Yang, J., Mossholder, K. W., & Peng, T. K. (2009). Supervisory procedural justice effects: The mediating roles of cognitive and affective trust. *The Leadership Quarterly*, 20(2), 143–154.
- Yang, S., & Farn, C. (2009). Social capital, behavioural control, and tacit knowledge sharing - A multi-informant design. *International Journal of Information Management*, 29(3), 210–218.
- Young, L. (2006). Trust: looking forward and back. *Journal of Business & Industrial Marketing*, 21(7), 439–445. doi:10.1108/08858620610708920
- Yukl, G. (1981). *Leadership in organizations*, New Jersey, Prentice-Hall. Englewood Cliffs.
- Yukl, G. (2013). *Leadership in Organizations* (8th ed.). U.S, Pearson Prentice Hall.
- Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research*, 62(2), 81–93. doi:10.1037/a0019835.
- Zhang, M., Zhao, X., & Lyles, M. (2018). Effects of absorptive capacity, trust and information systems on product innovation". *International Journal of Operations and Production Management*, 38(2), 493–512.

- Zhang, S., Bowers, A. J., & Mao, Y. (2021). Authentic leadership and teachers' voice behaviour: The mediating role of psychological empowerment and moderating role of interpersonal trust. *Educational Management Administration & Leadership*, 49(5), 768–785.
- Zhang, Y., Khan, U., Lee, S., & Salik, M. (2019). The influence of management innovation and technological innovation on organization performance. A mediating role of sustainability. *Sustainability*, 11(2), 495.
- Zheng, J., Wu, G., & Xie, H. (2017). Impacts of leadership on project-based organizational innovation performance: The mediator of knowledge sharing and moderator of social capital. *Sustainability*, 9(10).
- Zheng, X., Liu, Z., & Gong, X. (2016). Why does leader attention scope matter for innovation ambidexterity? The mediating role of transformational leadership. *Leadership & Organization Development Journal*.
- Zhu, W., Newman, A., Miao, Q., & Hooke, A. (2013). Revisiting the mediating role of trust in transformational leadership effects: Do different types of trust make a difference? *The Leadership Quarterly*, 24(1), 94–105.

Appendix 1: English Questionnaire

Dear Sir/Madam

I am a research student in the business school at the University of Huddersfield in the UK, conducting research under the supervision of **DR. Frances-Louise McGregor and DR. Muhibul Haq**. My research aims to investigate **“The Effect of Transformational leadership on Innovation when knowledge sharing and interpersonal trust mediates the relationship within the Jordanian banking sector.”** Can I please ask you to complete the questionnaire, I assure that the data collected will be kept confidential and no individuals will be identified in the research or in any report or publication based on this study. You have the right to withdraw your data within one week after you have completed the questionnaire. Should you wish to do so, please write to me at the email given below.

I would also like to assure you that this study has been reviewed and received ethics clearance through the committee of research ethics at the University of Huddersfield.

Thank you in advance for your co-operation.

Yours Sincerely,

Yaser Shyyab (Researcher)

E-mail: Yaser.Shyyab@hud.ac.uk.

Profile of the respondents

Bank you work for: _____

Gender: ☐ Male ☐ Female

Age: ☐ 30 years or less ☐ 31 – 39 years ☐ 40 – 49 years ☐ 50 years or more

Education: ☐ Diploma ☐ Bachelor ☐ Master + PHD

Monthly Salary: ☐ JD 300 or less ☐ JD 301 – JD 500 ☐ JD 501 – JD 700 ☐ JD 701 or more

Marital Status: ☐ Married ☐ Single ☐ other

Experience: ☐ 5 years or less ☐ 6 – 10 years ☐ 11 – 15 years ☐ 16 years or more

Job Title: ☐ Manager ☐ Assistant Manager ☐ Supervisor ☐ Employee

Employee innovation items: Please indicate how often the following statements characterize this employee. Use the following scale:

No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Innovation / Product						
1	The bank follows a formal process to generate and nurture new ideas.					

2	The bank initiates the development of new services based on customers' needs.					
3	The bank initiates the development of new services based on market trends.					
4	The bank applies new technologies and software to add new services and improve the quality of current service.					
5	The bank adopts new/non-traditional solutions to solve problems.					
6	The bank initiates new services to improve customers' access to goods or services.					
7	The bank introduces new or significantly improved services into the market before its competitors.					
Innovation / Process						
8	The bank follows a formal process to keep on improving its services to customers.					
9	The bank tracks the relevant best practices to improve its process.					
10	The bank follows flexible management strategies to deal with unexpected changes.					
11	The bank provides significant improvements in its structures, practices and techniques.					
12	The bank introduces more developed and distinctive strategies to manage its process, in comparison with competitor's strategies.					

No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Transformational leadership: kindly answer the following questions.						
Idealized influence						
13	Top manager changes their style and approach according to who they are dealing with.					
14	Top manager builds team identity and moral.					
15	My leader is ready to trust the person he/she is rating to overcome any obstacle.					
16	My manager initiates change, pursues goods beyond expectation.					
17	My manager suggests new ways of looking at how to complete assignments.					
Inspirational Motivation						
18	My manager talks enthusiastically about what needs to be accomplished.					
19	My manager inspires confidence in the value of his/ her argument.					
20	My manager achieves goals through realistic planning.					
21	My manager talks optimistically about the future.					
22	My manager articulates a compelling vision of the future.					
Intellectual stimulation						
23	My manager encourages subordinates to work to their best potential.					
24	My manager builds co-operative relationships with immediate colleagues.					
25	My manager values employees' contributions.					
26	My managers get others to look at problems from many different angles.					
Individualized Consideration						
27	My manager provides works or assignments that are stretching achievable.					
28	My manager tries to understand the other person's viewpoint.					
29	My manager re-examines critical assumptions to question whether they are appropriate.					
30	My manager encourages subordinates to re-think their ideas.					
31	My manager considers an individual as having different needs, abilities, and aspirations from others.					

No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Interpersonal trust at work: Kindly answer the following questions.						
32	Management at my firm is sincere in its attempts to meet the workers' point of view.					
33	Our firm has a poor future (unless it can attract better managers.)					
34	If I got into difficulties at work, I know my workmates would try and help me out.					
35	Management can be trusted to make sensible decisions for the firm's future.					
36	I can trust the people I work with to lend me a hand if its needed.					
37	Management at work seems to do an efficient job.					
38	I feel quite confident that the firm will always try to treat me fairly.					
39	Most of my workmates can be relied upon to do as they say they will do.					
40	I have full confidence in the skills of my workmates.					
41	Most of my fellow workers would get on with their work even if supervisors were not around.					
42	I can rely on other workers not to make my job more difficult by careless work.					
43	Our management would be quite prepared to gain advantage by deceiving the workers.					
Knowledge sharing						
44	When I have learned something new, I tell my colleagues in my team about it.					
45	I share the information I have with colleagues within my team when they ask me to.					
46	I think it is important that my colleagues have specific knowledge of my work.					
47	I regularly tell my colleagues about the ins and outs of my work.					
48	Colleagues within my team tell me what they know, when I ask them about it.					
49	When they've learned something new, colleagues within my department tell me about it.					

50	When I have to know or to learn something, I refer to my colleagues as a source of knowledge.					
51	Knowledge sharing with my colleagues within my department is considered a normal thing.					

Appendix 2: Consent Form

Consent Form for Participants

Huddersfield Business School



The impact of transformational leadership on product and process innovation within the Jordanian banking sector.

Consent Form for Participants

I have read the **information sheet for participants** for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study at any time, or to decline to answer any questions in the study. I agree to provide information to the researcher under the conditions of confidentiality set out on **information sheet**.

I agree to participate in this study under the conditions set out in the **information sheet** form.

Signed: _____

Name: _____

Date: _____

Researcher Name and Contact information

Yaser Shyyab, PhD student Business and management Department.

Business School

University of Huddersfield

Huddersfield, United Kingdom

Email address: Yaser.shvvab@hud.ac.uk

Supervisors Name and Contact information

DR. Frances-Louise McGregor

Senior Lecturer in Human Resource Management

Course Leader - BA Business Management Suite

Email: F.L.McGregor@hud.ac.uk

DR. Muhibul Haq

Lecturer in the Department of Management

Email: m.haq@hud.ac.uk

Appendix 3: Arabic questionnaire

استبيان

أخي الموظف / اختي الموظفه

تحية طيبة وبعد،،

يقوم الباحث بإجراء دراسة بعنوان "أثر تشارك المعرفة ودعم القيادة التحوليه في ابتكار الموظف: الثقة في العلاقات الشخصية كعامل وسيط ضمن قطاع البنوك في الأردن" وذلك لإستكمال متطلبات الحصول على درجة الدكتوراه في إدارة الأعمال من جامعة هيدرسفيلد في المملكة المتحدة.

أرجو منكم تعبئة هذا الاستبيان بعناية ودقه واختيار الإجابة التي تعكس رأيك الحقيقي كما هو في الواقع في كل فقره، علما بأن الإجابات التي ستقدمها ستعامل بسرية تامة ولن تستخدم إلا لأغراض البحث العلمي.

شاكرا حسن تعاونكم.

إشراف: الدكتور فرانسيس لويس ماكجريجور / الدكتور مهيب الحق

الباحث:

ياسر شيايب

بريد الكتروني: yaser.shyyab@hud.ac.uk

المعلومات العامه

البنك الذي تعمل به: _____

النوع الإجتماعي : ☐ ذكر ☐ أنثى

العمر: ☐ 30 سنة فأقل ☐ 39-31 سنة ☐ 49-40 سنة ☐ 50 سنة فأكثر

المؤهل العلمي: ☐ دبلوم ☐ بكالوريوس ☐ ماجستير+دكتوراه

الدخل الشهري: ☐ أقل من 300 دينار ☐ 301-500 دينار ☐ 501-700 دينار ☐ 701 دينار فأكثر

الحالة الإجتماعية: ☐ متزوج ☐ أعزب ☐ غير ذلك

عدد سنوات الخدمة ☐ 5 سنوات فأقل ☐ 6-10 سنوات ☐ 11-15 سنة ☐ 16 سنة فأكثر

المسمى الوظيفي: ☐ مدير ☐ نائب مدير ☐ رئيس قسم/شعبه ☐ موظف

مكونات ابتكار الموظف: "يرجى التكرم بالإجابة على الفقرات التالية:

رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)
<u>الابتكار/المنتج</u>						
<u>الابتكار/المنتج</u>						
1	يتبع البنك نظام مؤسسي لابتكار ورعاية الأفكار الجديدة.					
2	يطور البنك الخدمات الجديدة بناء على احتياجات العملاء.					
3	يطور البنك الخدمات الجديدة بناء على اتجاهات السوق.					
4	يطبق البنك تقنيات وبرمجيات جديدة لإضافة خدمات جديدة وتحسين جودة الخدمات الحالية.					

رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)
5	يطبق البنك حلول جديدة غير تقليدية لحل المشاكل ذات العلاقة بالمنتجات.					
6	يبادر البنك باطلاق خدمات جديدة لتحسين وصول العملاء الى السلع أو الخدمات.					
7	يعمل البنك على تقديم خدمات جديدة قبل البنوك المنافسة.					
الإبتكار/العملية						
8	يتوفر في البنك نظام مؤسسي لمواصلة تحسين خدماته المقدمة للعملاء.					
9	يبحث البنك عن أفضل الممارسات المعنية لتحسين عملياته.					
10	يطبق البنك استراتيجيات إدارة مرنة للتعامل مع التغيرات غير المتوقعة في عمليات البنك.					
11	يقوم البنك بإجراء تحسينات كبيرة في هيكله وممارساته وتقنياته.					
12	يقوم البنك بإدخال استراتيجيات متطورة و متميزة لإدارة عملياته مقارنة باستراتيجيات البنوك المنافسة.					

رقم العبارة	العبارة	موافق بدرجة كبيرة جداً (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جداً (1)
القيادة التحولية: يرجى التكرم بالإجابة على الفقرات التالية:						
التأثير المثالي						
13	يقوم المدير بتغيير أسلوبه و نهجه وفقاً لمن يتعاملون معه.					
14	يقوم المدير بتكوين هوية الفريق وأخلاقياته.					
15	يثق مديري بموظفيه لتجاوز أية عقبات.					
16	يبادر مديري بالتغيير ويسعى لتحقيق ما يفوق التوقعات.					
17	يقترح مديري طرقاً جديدة للنظر في كيفية وطريقة إنجاز المهام.					
الدافع الملهم						
18	يتحدث مديري بحماس شديد حول ما يجب إنجازه من مهام.					
19	يخلق مديري الثقة في قيمة قراراته/ها.					
20	يحقق مديري الأهداف من خلال التخطيط الواقعي.					
21	يتحدث مديري بتفاؤل عن المستقبل في العمل.					
22	يعكس مديري رؤية واضحة للمستقبل في العمل.					
التحفيز الفكري						

رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)
23	يحفز مديري موظفيه على العمل بأفضل إمكانياتهم.					
24	يبني مديري علاقات قائمة على التعاون مع الزملاء المباشرين.					
25	يقدر مديري مساهمات الموظفين.					
26	يحث مديري الآخرين على النظر إلى المشكلات من عدة زوايا مختلفة.					
الاعتبارات الفردية						
27	يقدم مديري أعمال أو مهام يمكن إنجازها لكل موظف.					
28	يحاول مديري فهم وجهة نظر الشخص الآخر.					
29	يحدد المدير برامج تدريبية لكل موظف حسب احتياجاته الخاصة.					
30	يعزز مديري ثقة العامل بنفسه لتحسين مستوى أدائه.					
31	يعتبر مديري أن كل فرد لديه احتياجات وقدرات وتطلعات مختلفة عن الآخرين.					
رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)

رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)
الثقة الشخصية في العمل :يرجى التكرم بالإجابة على الفقرات التالية:						
32	الإدارة في البنك الذي أعمل به صادقة ومخلصة في محاولاتها لتلبية آراء موظفيها.					
33	ينتظر البنك الذي أعمل به مستقبل مشرق اذا كان جميع المدراء الذين يتناوبون على ادارة البنك بكفاءة المدير الحالي.					
34	إذا واجهت صعوبات في العمل، فأعلم أن زملائي في العمل سيحاولون مساعدتي لحلها.					
35	أثق بالإدارة لاتخاذ قرارات معقولة لمستقبل البنك.					
36	يمكنني الوثوق بالأشخاص الذين أعمل معهم لمساعدتي إذا لزم الأمر.					
37	أعتقد أن الإدارة في العمل تقوم بعمل فعال.					
38	لدي ثقة كبيرة أن إدارة البنك ستحاول أن تتعامل معي بكل انصاف وعدل.					
39	يمكن الاعتماد على معظم زملائي في العمل للقيام بما يقولون إنهم سيفعلونه.					
40	لدي ثقة كبيرة في مهارات زملائي في العمل.					
41	يواصل زملائي أداء مهامهم حتى لو لم يكن المشرفون حولهم في العمل.					
42	يحرص زملائي على عدم الاستهتار بالعمل حتى لا يزدوا من صعوبة انجاز واجباتي الوظيفية.					
43	لدى الاداره الاستعداد لتضليل وخداع الموظفين لتحقيق بعض المكتسبات.					

رقم العبارة	العبارة	موافق بدرجة كبيرة جدا (5)	موافق بدرجة كبيرة (4)	موافق بدرجة متوسطة (3)	موافق بدرجة متدنية (2)	موافق بدرجة متدنية جدا (1)
مشاركة المعرفة :يرجى التعبير عن درجة موافقتك على كل من العبارات التالية، باستخدام المقياس أعلاه:						
44	عندما أتعلم شيئاً جديداً ، أخبر زملائي في القسم عنه.					
45	أشارك المعلومات التي لدي مع زملائي في القسم عندما يطلبون مني ذلك.					
46	أعتقد أنه من المهم أن يكون لزملائي معرفة محددة بعلمي.					
47	أخبر زملائي بانتظام عن تفاصيل عملي.					
48	عندما أسأل زملائي في القسم عن شيء ما، فيخبروني بما يعلمونه عنه.					
49	عندما يتعلم زملائي في القسم شيئاً جديداً، يخبروني به.					
50	عندما يجب أن أعرف شيئاً ما أو أتعلمه، ألجأ إلى زملائي فهم مصدر المعرفة.					
51	مشاركة المعرفة مع زملائي في العمل هو أمر طبيعي.					

Appendix 4: Full EFA Results for the instrument

Original model

Factor Analysis

Notes

Output Created		22-JUL-2022 10:54:27
Comments		
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	N of Rows in Working Data File	418

Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Syntax		<p>FACTOR</p> <p>/VARIABLES Prod1 Prod2 Prod3 Prod4 Prod5 Prod6 Prod7 Proc1 Proc2 Proc3 Proc4 Proc5 II1 II2 II3</p> <p>II4 II5 IM1 IM2 IM3 IM4 IM5 IS1 IS2 IS3 IS4 IC1 IC2 IC3 IC4 IC5 IT1 IT2 IT3 IT4 IT5 IT6 IT7 IT8 IT9</p> <p>IT10 IT11 IT12R KS1 KS2 KS3 KS4R KS5 KS6 KS7 KS8</p> <p>/MISSING LISTWISE</p> <p>/ANALYSIS Prod1 Prod2 Prod3 Prod4 Prod5 Prod6 Prod7 Proc1 Proc2 Proc3 Proc4 Proc5 II1 II2 II3 II4</p> <p>II5 IM1 IM2 IM3 IM4 IM5 IS1 IS2 IS3 IS4 IC1 IC2 IC3 IC4 IC5 IT1 IT2 IT3 IT4 IT5 IT6 IT7 IT8 IT9</p> <p>IT10 IT11 IT12R KS1 KS2 KS3 KS4R KS5 KS6 KS7 KS8</p> <p>/PRINT INITIAL KMO REPR EXTRACTION ROTATION</p> <p>/FORMAT BLANK(.3)</p> <p>/CRITERIA MINEIGEN(1) ITERATE(25)</p> <p>/EXTRACTION PC</p> <p>/CRITERIA ITERATE(25)</p> <p>/ROTATION PROMAX(4)</p> <p>/METHOD=CORRELATION.</p>
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[DataSet1] D:\PhD Dissertation\2021\The Effect of Transformational leadership on Innovation when knowledge sharing mediates the relationship\data & analysis\4. clear data.sav

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.939
Bartlett's Test of Sphericity	Approx. Chi-Square	18771.003
	df	1275
	Sig.	.000

Communalities

	Initial	Extraction
Prod1	1.000	.688
Prod2	1.000	.828
Prod3	1.000	.766
Prod4	1.000	.821
Prod5	1.000	.834
Prod6	1.000	.811
Prod7	1.000	.808
Proc1	1.000	.771
Proc2	1.000	.697

Proc3	1.000	.796
Proc4	1.000	.678
Proc5	1.000	.838
II1	1.000	.820
II2	1.000	.721
II3	1.000	.730
II4	1.000	.803
II5	1.000	.796
IM1	1.000	.807
IM2	1.000	.831
IM3	1.000	.777
IM4	1.000	.736
IM5	1.000	.748
IS1	1.000	.818
IS2	1.000	.770
IS3	1.000	.830
IS4	1.000	.851
IC1	1.000	.805
IC2	1.000	.835
IC3	1.000	.818
IC4	1.000	.791
IC5	1.000	.765
IT1	1.000	.571
IT2	1.000	.715
IT3	1.000	.532
IT4	1.000	.748
IT5	1.000	.844

IT6	1.000	.649
IT7	1.000	.696
IT8	1.000	.656
IT9	1.000	.750
IT10	1.000	.766
IT11	1.000	.603
IT12R	1.000	.578
KS1	1.000	.701
KS2	1.000	.782
KS3	1.000	.691
KS4R	1.000	.725
KS5	1.000	.709
KS6	1.000	.744
KS7	1.000	.654
KS8	1.000	.773

Extraction Method: Principal Component Analysis.

Total Variance Explained

Initial Eigenvalues				Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	17.783	34.868	34.868	17.783	34.868	34.868	11.254
2	4.899	9.606	44.474	4.899	9.606	44.474	11.331
3	4.078	7.997	52.471	4.078	7.997	52.471	11.245
4	2.944	5.773	58.243	2.944	5.773	58.243	6.951

5	2.227	4.367	62.611	2.227	4.367	62.611	8.883
6	2.046	4.011	66.621	2.046	4.011	66.621	10.238
7	1.939	3.801	70.422	1.939	3.801	70.422	7.724
8	1.307	2.563	72.985	1.307	2.563	72.985	9.965
9	1.051	2.061	75.046	1.051	2.061	75.046	3.669
10	.842	1.650	76.696				
11	.690	1.353	78.049				
12	.637	1.250	79.299				
13	.568	1.113	80.412				
14	.551	1.080	81.492				
15	.526	1.031	82.523				
16	.468	.919	83.442				
17	.443	.869	84.310				
18	.436	.855	85.165				
19	.409	.803	85.968				
20	.393	.770	86.738				
21	.373	.731	87.469				
22	.361	.708	88.178				
23	.353	.692	88.870				
24	.320	.628	89.498				

25	.305	.599	90.096				
26	.300	.589	90.686				
27	.293	.575	91.260				
28	.285	.560	91.820				
29	.285	.558	92.378				
30	.270	.529	92.907				
31	.262	.514	93.421				
32	.245	.480	93.901				
33	.231	.454	94.355				
34	.229	.449	94.804				
35	.220	.430	95.234				
36	.208	.407	95.642				
37	.201	.394	96.036				
38	.195	.382	96.418				
39	.186	.366	96.783				
40	.177	.348	97.131				
41	.173	.339	97.470				
42	.165	.323	97.793				
43	.161	.316	98.110				

44	.148	.290	98.399				
45	.141	.276	98.675				
46	.130	.255	98.929				
47	.124	.243	99.172				
48	.120	.235	99.408				
49	.109	.215	99.623				
50	.102	.200	99.823				
51	.090	.177	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Prod1		.593							.394
Prod2		.910							
Prod3		.844							
Prod4		.828							

Prod5		.905							
Prod6		.925							
Prod7		.919							
Proc1							.913		
Proc2							.728		
Proc3							.950		
Proc4							.512		
Proc5							.967		
II1						.922			
II2						.799			
II3						.760			
II4						.858			
II5						.870			
IM1				.848					
IM2				.869					
IM3				.889					
IM4				.894					
IM5				.823					
IS1								.885	

IS2								.812	
IS3								.910	
IS4								.890	
IC1					.896				
IC2					.894				
IC3					.927				
IC4					.822				
IC5					.861				
IT1	.525								.381
IT2	.889								
IT3	.595								
IT4	.832								
IT5	.923								
IT6	.767								
IT7	.774								
IT8	.686								
IT9	.816								
IT10	.931								
IT11	.739								

IT12R	.458								.401
KS1			.771						
KS2			.849						
KS3			.700						
KS4R			.546						.678
KS5			.839						
KS6			.803						
KS7			.616						
KS8			.840						

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.^a

a. Rotation converged in 7 iterations.

Appendix 5: Revised Model

Factor Analysis

Notes

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Comments		
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	418
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Syntax		<p>FACTOR</p> <p>/VARIABLES Prod2 Prod3 Prod4 Prod5 Prod6 Prod7 Proc1 Proc2 Proc3 Proc4 Proc5 II1 II2 II3 II4 II5</p> <p>IM1 IM2 IM3 IM4 IM5 IS1 IS2 IS3 IS4 IC1 IC2 IC3 IC4 IC5 IT2 IT3 IT4 IT5 IT6 IT7 IT8 IT9 IT10 IT11</p> <p>KS1 KS2 KS3 KS5 KS6 KS7 KS8</p> <p>/MISSING LISTWISE</p> <p>/ANALYSIS Prod2 Prod3 Prod4 Prod5 Prod6 Prod7 Proc1 Proc2 Proc3 Proc4 Proc5 II1 II2 II3 II4 II5</p> <p>IM1 IM2 IM3 IM4 IM5 IS1 IS2 IS3 IS4 IC1 IC2 IC3 IC4 IC5 IT2 IT3 IT4 IT5 IT6 IT7 IT8 IT9 IT10 IT11</p> <p>KS1 KS2 KS3 KS5 KS6 KS7 KS8</p> <p>/PRINT INITIAL KMO REPR EXTRACTION ROTATION</p> <p>/FORMAT BLANK(.3)</p> <p>/CRITERIA MINEIGEN(1) ITERATE(25)</p> <p>/EXTRACTION PC</p> <p>/CRITERIA ITERATE(25)</p> <p>/ROTATION PROMAX(4)</p> <p>/METHOD=CORRELATION.</p>
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	Elapsed Time	00:00:00.05
	Maximum Memory Required	251376 (245.484K) bytes

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.939
Bartlett's Test of Sphericity	Approx. Chi-Square	17451.710
	df	1081
	Sig.	.000

Communalities

	Initial	Extraction
Prod2	1.000	.834
Prod3	1.000	.760
Prod4	1.000	.767
Prod5	1.000	.828
Prod6	1.000	.814
Prod7	1.000	.816
Proc1	1.000	.768
Proc2	1.000	.700
Proc3	1.000	.794
Proc4	1.000	.616
Proc5	1.000	.839
II1	1.000	.812
II2	1.000	.720
II3	1.000	.724
II4	1.000	.801
II5	1.000	.797

IM1	1.000	.804
IM2	1.000	.829
IM3	1.000	.781
IM4	1.000	.736
IM5	1.000	.749
IS1	1.000	.817
IS2	1.000	.767
IS3	1.000	.824
IS4	1.000	.847
IC1	1.000	.803
IC2	1.000	.835
IC3	1.000	.810
IC4	1.000	.794
IC5	1.000	.768
IT2	1.000	.718
IT3	1.000	.531
IT4	1.000	.711
IT5	1.000	.803
IT6	1.000	.637
IT7	1.000	.692
IT8	1.000	.610
IT9	1.000	.754
IT10	1.000	.693
IT11	1.000	.595
KS1	1.000	.673
KS2	1.000	.777
KS3	1.000	.661

KS5	1.000	.721
KS6	1.000	.756
KS7	1.000	.658
KS8	1.000	.775

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	16.804	35.752	35.752	16.804	35.752	35.752	10.234
2	4.612	9.814	45.566	4.612	9.814	45.566	10.655
3	3.802	8.090	53.656	3.802	8.090	53.656	11.372
4	2.807	5.972	59.628	2.807	5.972	59.628	6.673
5	2.083	4.433	64.060	2.083	4.433	64.060	8.756
6	2.034	4.328	68.388	2.034	4.328	68.388	9.791
7	1.885	4.011	72.399	1.885	4.011	72.399	7.530
8	1.292	2.750	75.149	1.292	2.750	75.149	9.823
9	.789	1.679	76.828				
10	.726	1.544	78.372				
11	.607	1.290	79.663				
12	.547	1.165	80.828				

13	.493	1.049	81.877				
14	.481	1.024	82.901				
15	.447	.952	83.853				
16	.434	.922	84.775				
17	.420	.894	85.669				
18	.389	.827	86.496				
19	.368	.782	87.278				
20	.360	.767	88.044				
21	.341	.726	88.770				
22	.314	.668	89.438				
23	.307	.653	90.092				
24	.297	.632	90.724				
25	.289	.615	91.339				
26	.285	.606	91.944				
27	.271	.576	92.520				
28	.270	.574	93.094				
29	.250	.531	93.625				
30	.233	.495	94.120				
31	.231	.492	94.612				

32	.221	.470	95.082				
33	.210	.447	95.530				
34	.202	.429	95.959				
35	.198	.421	96.379				
36	.186	.397	96.776				
37	.182	.388	97.164				
38	.174	.370	97.535				
39	.168	.357	97.891				
40	.152	.323	98.214				
41	.142	.302	98.516				
42	.135	.287	98.804				
43	.126	.267	99.071				
44	.121	.258	99.328				
45	.116	.246	99.575				
46	.108	.230	99.804				
47	.092	.196	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix^a

	Component							
	1	2	3	4	5	6	7	8
Prod2		.919						
Prod3		.837						
Prod4		.807						
Prod5		.917						
Prod6		.927						
Prod7		.931						
Proc1							.916	
Proc2							.722	
Proc3							.948	
Proc4							.505	
Proc5							.965	
II1						.898		
II2						.811		
II3						.739		
II4						.846		

II5						.859		
IM1				.871				
IM2				.892				
IM3				.889				
IM4				.891				
IM5				.822				
IS1								.891
IS2								.818
IS3								.904
IS4								.901
IC1					.903			
IC2					.898			
IC3					.930			
IC4					.831			
IC5					.869			
IT2	.891							
IT3	.584							
IT4	.860							
IT5	.900							

IT6	.778							
IT7	.767							
IT8	.688							
IT9	.825							
IT10	.905							
IT11	.724							
KS1			.786					
KS2			.892					
KS3			.753					
KS5			.890					
KS6			.862					
KS7			.662					
KS8			.886					

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.^a

a. Rotation converged in 7 iterations.

Appendix 6: AMOS Results

Original first-order measurement model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	130	3305.246	1196	.000	2.764
Saturated model	1326	.000	0		
Independence model	51	19609.624	1275	.000	15.380

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.058	.746	.719	.673
Saturated model	.000	1.000		
Independence model	.320	.132	.097	.127

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.831	.820	.885	.877	.885
Saturated model	1.000		1.000		1.000

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.938	.780	.830
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	2109.246	1941.811	2284.252
Saturated model	.000	.000	.000
Independence model	18334.624	17884.719	18790.951

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	7.926	5.058	4.657	5.478
Saturated model	.000	.000	.000	.000
Independence model	47.025	43.968	42.889	45.062

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.065	.062	.068	.000
Independence model	.186	.183	.188	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	3565.246	3602.287	4089.858	4219.858
Saturated model	2652.000	3029.819	8003.048	9329.048
Independence model	19711.624	19726.156	19917.434	19968.434

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	8.550	8.148	8.969	8.639
Saturated model	6.360	6.360	6.360	7.266
Independence model	47.270	46.191	48.364	47.305

HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	162	166
Independence model	29	30

Regression Weights: (Group number 1 - Default model)

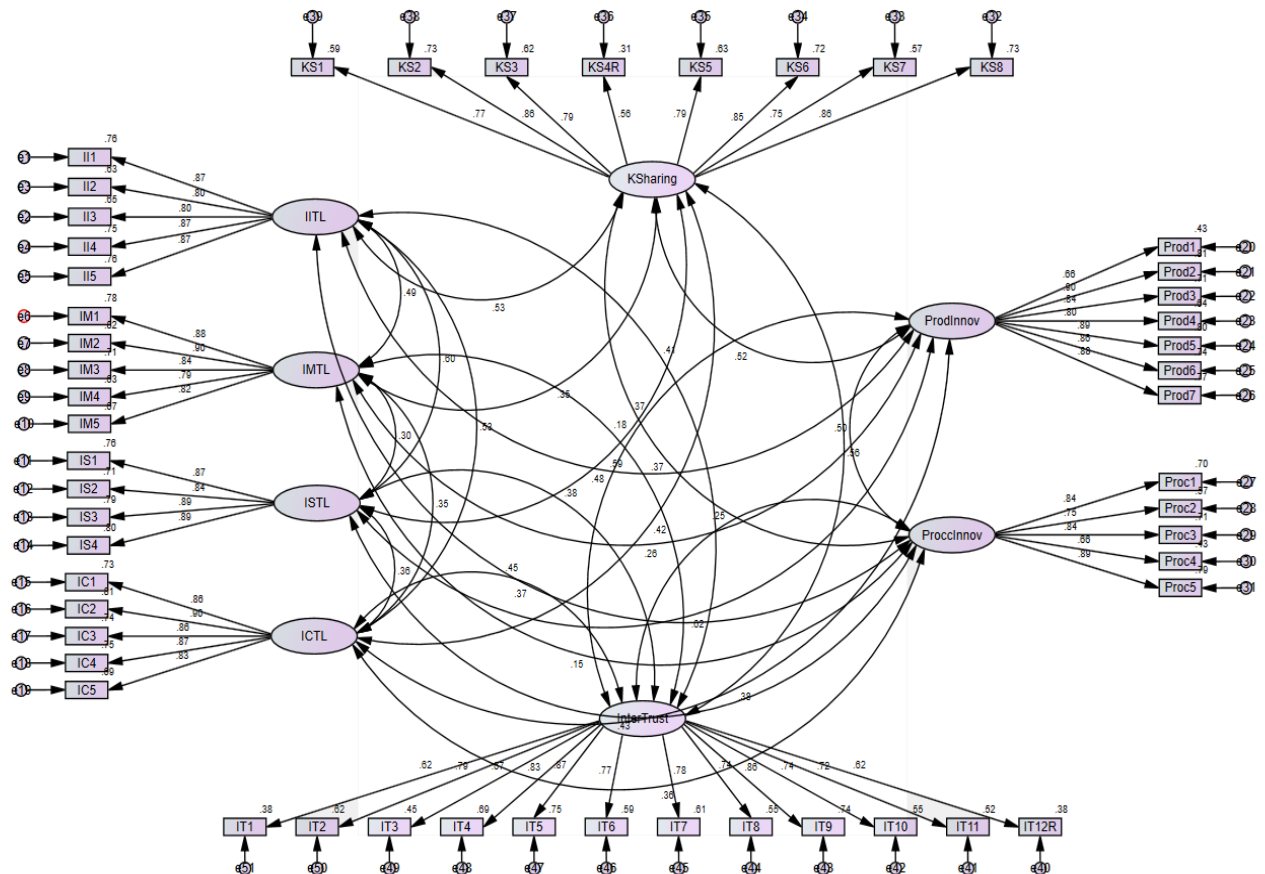
	Estimate	S.E.	C.R.	P	Label
Prod1 <--- ProdInnov	1.000				
Prod2 <--- ProdInnov	1.254	.078	16.036	***	
Prod3 <--- ProdInnov	1.170	.077	15.156	***	
Prod4 <--- ProdInnov	1.185	.082	14.534	***	
Prod5 <--- ProdInnov	1.264	.079	15.911	***	
Prod6 <--- ProdInnov	1.169	.075	15.485	***	
Prod7 <--- ProdInnov	1.222	.078	15.704	***	
Proc1 <--- ProcInnov	1.000				
Proc2 <--- ProcInnov	.734	.042	17.595	***	
Proc3 <--- ProcInnov	.905	.043	20.827	***	
Proc4 <--- ProcInnov	.549	.037	14.691	***	
Proc5 <--- ProcInnov	1.010	.045	22.492	***	
II1 <--- IITL	1.000				
II2 <--- IITL	.893	.044	20.453	***	
II3 <--- IITL	.919	.044	20.833	***	
II4 <--- IITL	1.006	.042	23.822	***	

			Estimate	S.E.	C.R.	P	Label
II5	<---	IITL	1.030	.043	24.045	***	
IM1	<---	IMTL	1.000				
IM2	<---	IMTL	.996	.037	26.608	***	
IM3	<---	IMTL	1.001	.043	23.106	***	
IM4	<---	IMTL	.821	.039	20.797	***	
IM5	<---	IMTL	.955	.044	21.799	***	
IS1	<---	ISTL	1.000				
IS2	<---	ISTL	.914	.041	22.555	***	
IS3	<---	ISTL	1.048	.042	24.919	***	
IS4	<---	ISTL	.984	.039	25.335	***	
IC1	<---	ICTL	1.000				
IC2	<---	ICTL	1.026	.041	25.021	***	
IC3	<---	ICTL	.980	.042	23.136	***	
IC4	<---	ICTL	.964	.041	23.506	***	
IC5	<---	ICTL	.971	.045	21.796	***	
IT12R	<---	InterTrust	.877	.067	13.087	***	
IT11	<---	InterTrust	.895	.057	15.574	***	

			Estimate	S.E.	C.R.	P	Label
IT10	<---	InterTrust	1.252	.078	16.128	***	
IT9	<---	InterTrust	1.152	.060	19.354	***	
IT8	<---	InterTrust	.973	.060	16.098	***	
IT7	<---	InterTrust	.768	.045	17.095	***	
IT6	<---	InterTrust	1.000				
IT5	<---	InterTrust	1.091	.056	19.554	***	
IT4	<---	InterTrust	1.115	.060	18.471	***	
IT3	<---	InterTrust	.827	.058	14.329	***	
IT2	<---	InterTrust	1.159	.067	17.356	***	
IT1	<---	InterTrust	.833	.064	13.077	***	
KS8	<---	KSharing	1.000				
KS7	<---	KSharing	.842	.045	18.536	***	
KS6	<---	KSharing	1.007	.045	22.427	***	
KS5	<---	KSharing	1.004	.050	20.018	***	
KS4R	<---	KSharing	.699	.057	12.221	***	
KS3	<---	KSharing	.971	.049	19.819	***	
KS2	<---	KSharing	.991	.043	22.864	***	

		Estimate	S.E.	C.R.	P	Label
KS1	<--- KSharing	.970	.051	18.959	***	

Original first-order measurement model.



Revised first-order measurement model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	118	1497.424	828	.000	1.808
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.044	.852	.831	.746
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.903	.895	.954	.950	.954
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.917	.828	.875
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	669.424	565.023	781.646
Saturated model	.000	.000	.000
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	3.591	1.605	1.355	1.874
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.044	.040	.048	.997

Model	RMSEA	LO 90	HI 90	PCLOSE
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1733.424	1761.263	2209.611	2327.611
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	4.157	3.907	4.426	4.224
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	250	258
Independence model	27	28

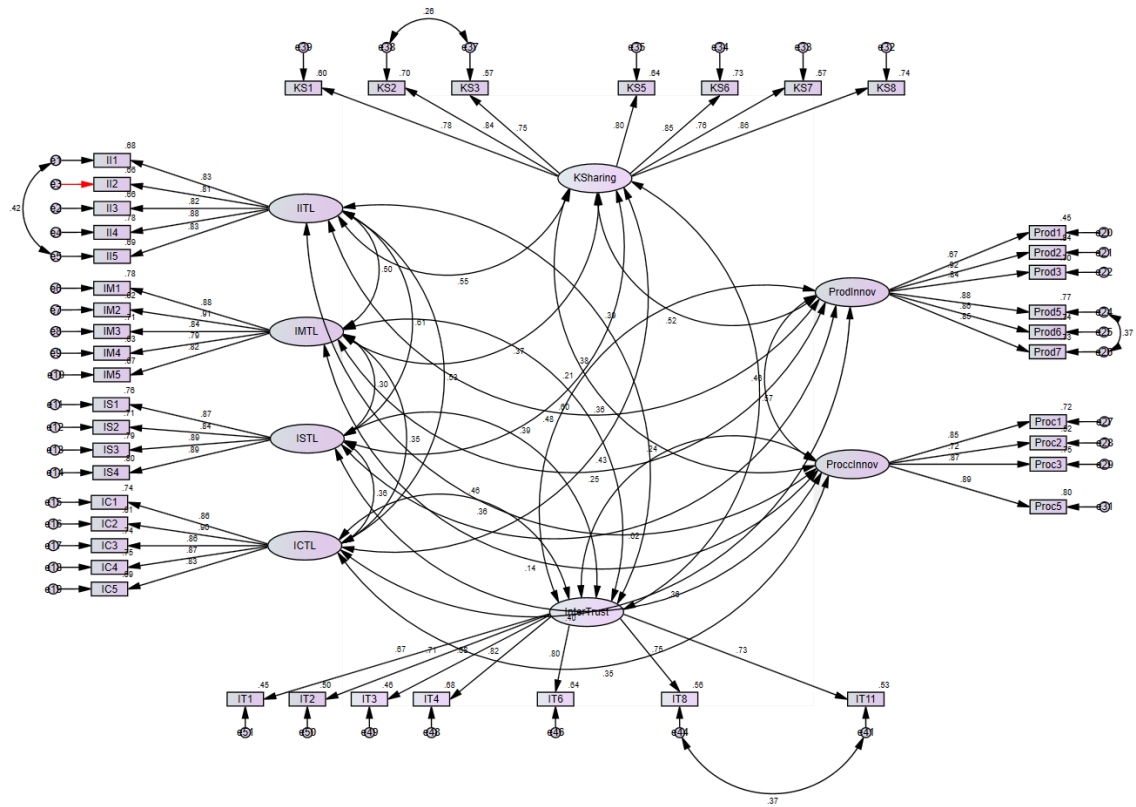
Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Prod1 <--- ProdInnov	1.000				
Prod2 <--- ProdInnov	1.254	.076	16.475	***	
Prod3 <--- ProdInnov	1.145	.075	15.292	***	
Prod5 <--- ProdInnov	1.223	.077	15.916	***	
Prod6 <--- ProdInnov	1.150	.073	15.701	***	
Prod7 <--- ProdInnov	1.170	.075	15.537	***	
Proc1 <--- ProcInnov	1.000				
Proc2 <--- ProcInnov	.697	.042	16.793	***	
Proc3 <--- ProcInnov	.917	.042	21.944	***	
Proc5 <--- ProcInnov	1.000	.044	22.887	***	
II1 <--- IITL	1.000				
II2 <--- IITL	.963	.050	19.377	***	
II3 <--- IITL	.981	.051	19.422	***	
II4 <--- IITL	1.081	.050	21.824	***	
II5 <--- IITL	1.030	.039	26.495	***	
IM1 <--- IMTL	1.000				
IM2 <--- IMTL	.997	.037	26.628	***	

			Estimate	S.E.	C.R.	P	Label
IM3	<---	IMTL	1.001	.043	23.104	***	
IM4	<---	IMTL	.821	.039	20.786	***	
IM5	<---	IMTL	.955	.044	21.798	***	
IS1	<---	ISTL	1.000				
IS2	<---	ISTL	.913	.041	22.518	***	
IS3	<---	ISTL	1.048	.042	24.926	***	
IS4	<---	ISTL	.985	.039	25.350	***	
IC1	<---	ICTL	1.000				
IC2	<---	ICTL	1.026	.041	25.052	***	
IC3	<---	ICTL	.979	.042	23.135	***	
IC4	<---	ICTL	.963	.041	23.478	***	
IC5	<---	ICTL	.971	.045	21.804	***	
IT11	<---	InterTrust	.873	.056	15.717	***	
IT8	<---	InterTrust	.948	.058	16.260	***	
IT6	<---	InterTrust	1.000				
IT4	<---	InterTrust	1.063	.058	18.275	***	
IT3	<---	InterTrust	.806	.056	14.450	***	

			Estimate	S.E.	C.R.	P	Label
IT2	<---	InterTrust	1.001	.066	15.203	***	
IT1	<---	InterTrust	.867	.061	14.230	***	
KS8	<---	KSharing	1.000				
KS7	<---	KSharing	.841	.045	18.561	***	
KS6	<---	KSharing	1.012	.045	22.683	***	
KS5	<---	KSharing	1.013	.050	20.348	***	
KS3	<---	KSharing	.928	.050	18.412	***	
KS2	<---	KSharing	.967	.044	21.910	***	
KS1	<---	KSharing	.982	.051	19.382	***	

Revised first-order measurement model.



Revised second-order measurement model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	104	1542.130	842	.000	1.832
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.051	.847	.828	.754
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.900	.893	.952	.949	.952
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.932	.840	.888
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	700.130	593.852	814.216
Saturated model	.000	.000	.000
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	3.698	1.679	1.424	1.953
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.045	.041	.048	.994
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1750.130	1774.666	2169.820	2273.820
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	4.197	3.942	4.471	4.256
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	247	255
Independence model	27	28

Regression Weights: (Group number 1 - Default model)

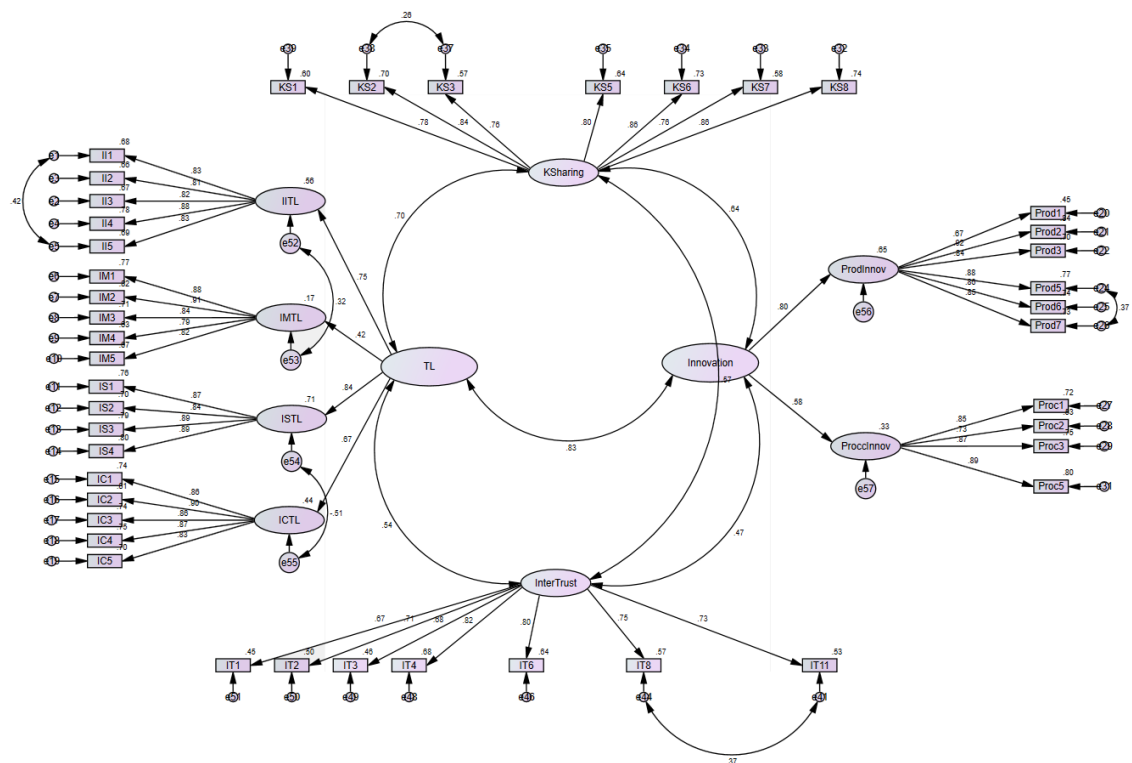
	Estimate	S.E.	C.R.	P	Label
IITL <--- TL	1.000				
IMTL <--- TL	.560	.069	8.097	***	

			Estimate	S.E.	C.R.	P	Label
ISTL	<---	TL	1.131	.096	11.837	***	
ICTL	<---	TL	1.120	.113	9.940	***	
ProdInnov	<---	Innovation	.907	.112	8.091	***	
ProcclInnov	<---	Innovation	1.000				
Prod1	<---	ProdInnov	1.000				
Prod2	<---	ProdInnov	1.257	.077	16.395	***	
Prod3	<---	ProdInnov	1.151	.075	15.251	***	
Prod5	<---	ProdInnov	1.226	.077	15.829	***	
Prod6	<---	ProdInnov	1.154	.074	15.644	***	
Prod7	<---	ProdInnov	1.172	.076	15.463	***	
Proc1	<---	ProcclInnov	1.000				
Proc2	<---	ProcclInnov	.699	.041	16.843	***	
Proc3	<---	ProcclInnov	.917	.042	21.914	***	
Proc5	<---	ProcclInnov	1.000	.044	22.849	***	
II1	<---	IITL	1.000				
II2	<---	IITL	.962	.050	19.360	***	
II3	<---	IITL	.981	.050	19.439	***	

		Estimate	S.E.	C.R.	P	Label
II4	<--- IITL	1.081	.050	21.834	***	
II5	<--- IITL	1.030	.039	26.498	***	
IM1	<--- IMTL	1.000				
IM2	<--- IMTL	.998	.038	26.555	***	
IM3	<--- IMTL	1.002	.043	23.054	***	
IM4	<--- IMTL	.822	.040	20.746	***	
IM5	<--- IMTL	.957	.044	21.809	***	
IS1	<--- ISTL	1.000				
IS2	<--- ISTL	.912	.041	22.460	***	
IS3	<--- ISTL	1.050	.042	24.964	***	
IS4	<--- ISTL	.985	.039	25.324	***	
IC1	<--- ICTL	1.000				
IC2	<--- ICTL	1.024	.041	25.067	***	
IC3	<--- ICTL	.979	.042	23.186	***	
IC4	<--- ICTL	.960	.041	23.422	***	
IC5	<--- ICTL	.972	.044	21.896	***	
IT11	<--- InterTrust	.874	.056	15.691	***	

			Estimate	S.E.	C.R.	P	Label
IT8	<---	InterTrust	.950	.058	16.285	***	
IT6	<---	InterTrust	1.000				
IT4	<---	InterTrust	1.065	.058	18.267	***	
IT3	<---	InterTrust	.804	.056	14.403	***	
IT2	<---	InterTrust	1.001	.066	15.162	***	
IT1	<---	InterTrust	.867	.061	14.212	***	
KS8	<---	KSharing	1.000				
KS7	<---	KSharing	.843	.045	18.635	***	
KS6	<---	KSharing	1.013	.045	22.736	***	
KS5	<---	KSharing	1.012	.050	20.334	***	
KS3	<---	KSharing	.929	.050	18.450	***	
KS2	<---	KSharing	.965	.044	21.834	***	
KS1	<---	KSharing	.979	.051	19.296	***	

Revised second-order measurement model.



Unidimensional model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	86	9101.171	860	.000	10.583
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.122	.377	.314	.342
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.412	.383	.437	.407	.435
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.952	.393	.414
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	8241.171	7938.091	8550.741
Saturated model	.000	.000	.000

Model	NCP	LO 90	HI 90
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	21.825	19.763	19.036	20.505
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.152	.149	.154	.000
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	9273.171	9293.461	9620.223	9706.223
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	22.238	21.511	22.980	22.286
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	43	44
Independence model	27	28

Nested model 1

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	96	4848.981	850	.000	5.705
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.079	.534	.482	.480
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.687	.667	.727	.709	.726
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.941	.647	.683
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	3998.981	3783.765	4221.551
Saturated model	.000	.000	.000

Model	NCP	LO 90	HI 90
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	11.628	9.590	9.074	10.124
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.106	.103	.109	.000
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	5040.981	5063.630	5428.387	5524.387
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	12.089	11.573	12.622	12.143

Model	ECVI	LO 90	HI 90	MECVI
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	80	82
Independence model	27	28

Nested model 2

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	89	6977.808	857	.000	8.142
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.112	.443	.385	.401
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.550	.525	.582	.558	.580
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.949	.522	.551
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	6120.808	5857.867	6390.302
Saturated model	.000	.000	.000

Model	NCP	LO 90	HI 90
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	16.733	14.678	14.048	15.324
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.131	.128	.134	.000
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	7155.808	7176.805	7514.966	7603.966
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	17.160	16.530	17.806	17.211

Model	ECVI	LO 90	HI 90	MECVI
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	56	58
Independence model	27	28

Nested model 3

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	89	7183.339	857	.000	8.382
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.107	.438	.380	.397
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.536	.511	.568	.543	.566
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.949	.509	.537
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	6326.339	6059.248	6599.975
Saturated model	.000	.000	.000

Model	NCP	LO 90	HI 90
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	17.226	15.171	14.531	15.827
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.133	.130	.136	.000
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	7361.339	7382.336	7720.497	7809.497
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	17.653	17.013	18.309	17.703

Model	ECVI	LO 90	HI 90	MECVI
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	54	56
Independence model	27	28

Direct relationship model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	71	715.221	364	.000	1.965
Saturated model	435	.000	0		
Independence model	29	10778.243	406	.000	26.547

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.052	.893	.873	.748
Saturated model	.000	1.000		
Independence model	.346	.184	.125	.171

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.934	.926	.966	.962	.966
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.897	.837	.866
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	351.221	279.116	431.112
Saturated model	.000	.000	.000

Model	NCP	LO 90	HI 90
Independence model	10372.243	10037.131	10713.715

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.715	.842	.669	1.034
Saturated model	.000	.000	.000	.000
Independence model	25.847	24.873	24.070	25.692

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.048	.043	.053	.720
Independence model	.248	.243	.252	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	857.221	868.229	1143.740	1214.740
Saturated model	870.000	937.442	2625.434	3060.434
Independence model	10836.243	10840.739	10953.272	10982.272

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.056	1.883	2.247	2.082
Saturated model	2.086	2.086	2.086	2.248
Independence model	25.986	25.183	26.805	25.997

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	239	251
Independence model	18	19

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Product <--- TL	.648	.066	9.827	***	
Pocess <--- TL	.721	.085	8.513	***	

Mediation model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	110	1500.503	836	.000	1.795
Saturated model	946	.000	0		
Independence model	43	15489.073	903	.000	17.153

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.052	.852	.833	.753
Saturated model	.000	1.000		
Independence model	.326	.151	.110	.144

Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.903	.895	.955	.951	.954
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.926	.836	.884
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	664.503	560.148	776.681
Saturated model	.000	.000	.000
Independence model	14586.073	14185.874	14992.678

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	3.598	1.594	1.343	1.863
Saturated model	.000	.000	.000	.000
Independence model	37.144	34.979	34.019	35.954

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.044	.040	.047	.999

Model	RMSEA	LO 90	HI 90	PCLOSE
Independence model	.197	.194	.200	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1720.503	1746.454	2164.406	2274.406
Saturated model	1892.000	2115.185	5709.565	6655.565
Independence model	15575.073	15585.217	15748.598	15791.598

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	4.126	3.876	4.395	4.188
Saturated model	4.537	4.537	4.537	5.072
Independence model	37.350	36.391	38.325	37.375

HOELTER

Model	HOELTER	HOELTER
	.05	.01
Default model	252	260
Independence model	27	28

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
KSharing <--- TL	.978	.087	11.264	***	path_d
InterTrust <--- TL	.689	.080	8.666	***	path_g
Product <--- TL	.612	.086	7.149	***	path_a
Pocess <--- TL	.753	.127	5.927	***	path_c
Product <--- KSharing	.031	.050	.625	.532	path_e
Pocess <--- KSharing	.007	.083	.087	.930	path_f
Product <--- InterTrust	.000	.041	.003	.998	path_h
Pocess <--- InterTrust	-.059	.071	-.835	.404	path_i

Standardized Regression Weights: (Group number 1 - Default model)

	Estimate
KSharing <--- TL	.714
InterTrust <--- TL	.545
IITL <--- TL	.747
IMTL <--- TL	.407
Product <--- TL	.664
Pocess <--- TL	.540

	Estimate
Product <--- KSharing	.046
Pocess <--- KSharing	.007
Product <--- InterTrust	.000
Pocess <--- InterTrust	-.054

User-defined estimands: (Group number 1 - Default model)

indirect1	.030
indirect2	.007
indirect3	.000
indirect4	-.041

User-defined estimands: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
indirect1	.030	-.130	.130	.651
indirect2	.007	-.244	.193	.959
indirect3	.000	-.067	.059	.986
indirect4	-.041	-.175	.070	.442

Appendix 7: Ethical Approval



Alex Thompson

To: Yaser Shyyab (Researcher)

Cc: Alper Kara; Frances-Louise McGregor; Muhibul Haq

Dear Yaser,

I have been asked to forward the following to you:

Thank you for your response to the Business School Research Ethics Committee, I confirm that your application is now approved.

Professor Alper Kara
Chair of the Business School Research Ethics Committee

Kind regards,

Alex Thompson

Education Services Administrator (Students and Courses)

T: 01484 472529

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