

Digital Leadership and Innovation Mediated by Employees' Satisfaction: A Recovery Strategy after the Pandemic

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Abstract: Due to the pandemic, organizations were forced to be acute in their crisis management strategies by seeking innovation. However, managers faced innovation problems due to social distancing, a lack of leadership, and increased employee dissatisfaction. Confronting those challenges implies direct actions. Therefore, digital leadership is a lever of satisfaction and innovation. Digital leadership and innovation are among the avenues to be explored. This article aims to broaden knowledge of the four innovation types. The objective is to assess the relationship between digital leadership, employee satisfaction, and four types of innovation, respectively. It gauges employees' satisfaction as a mediating variable. A questionnaire is a statistical tool for the EFA and CFA. The exploratory factor analysis is conducted on 283 users ensuring factor structure validity and scale. Scales were subject to normality tests. The confirmatory factor analysis confirmed the results. Results showed positive relationships between digital leadership, employee satisfaction, and innovation. This relationship is even significant when employees perceive managerial support.

Keywords: Digital Leadership, Satisfaction, Innovation.

1. INTRODUCTION

Beyond the simple spread of the disease and containment measures, the international economy was highly affected. Covid-19 had a substantial effect on national and international economy (Wahab Ali, 2020). Worldwide closure and lockdown stopped global activities and exerted negative influence on the international labor market. Working conditions have been altered due to social distancing resulting from the pandemic. The latter has imposed telework conditions and distance supervision has become a significant challenge for both managers and organizations. Following the progress of the pandemic and the prolongation of quarantines, organizations were forced to adopt preventive measures, including remote work (work from home). However, organizations and employees were unprepared for this practice (Supriadi *et al.*, 2020). Prosperities were mixed for those deploying it.

Organizations learn from experience to better adapt the management style that suits workforces. Customized remote work is becoming relevant after the coronavirus period.

Adopting this type of work has resulted in positive outcomes, including enhancing purchasing power without increasing wages due to flexibility in work hours and significant savings in transportation costs. Organizations adapting work from home have promoted employees' autonomy and have delegated authority. The delegation of authority in daily tasks allowed employees to acquire new experiences. Managerial strategies have evolved and become persuasive (Pramono *et al.*, 2021). Managers take into account the workforce's ideas and opinions in the decision-making processes. These practices have secured employees' satisfaction during the pandemic (Kızıloğlu, 2022).

Cumulated repercussion of the international pandemic will influence organizations permanently. Covid-19 pushed executive to reconsider the fundamentals details of their vision and adopted cultures. The health crisis as unparalleled pandemic has taught organizations new lessons. Modern organization have been forced to develop crisis management strategies leading to formulating resilience measurements (Coun *et al.*, 2021). The pandemic experience has led organizations to quickly face the Covid-19 challenge by implementing new procedures and managerial practices. Departing from the pandemic era requires a deep and lasting review of administrative and organizational practices. Empirical reality advocates that mature organizations have the superlatively practi-

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cal know-how to adapt to this painful period. This maturity has been illustrated in particular by collaborative initiatives and calculated risk. In the case of remote work, employees' attitude towards these initiatives has acted as an indicator with a magnifying glass effect between managers' trust and those who amplified the control measures (Houlihan, 2020). Behavioral values of teamwork, cohesion, and flexibility have emerged as empirical consequences. These values have enlightened successful leaders and managers. Contrariwise, managers fearing empowerment during this period will be faced with associated loss of command. They will be confronted with the loss of employee satisfaction and deteriorated innovation.

COVID-19 had profound negative consequences on the labor markets. Beyond the pressing health problems, the virus and the resulting economic shocks had three-fold impacts on labor. Bag *et al.* (2021) estimated a noteworthy escalation in unemployment rate. COVID-19 had a negative effect on global GDP growth. Preliminary estimations of (Uluğ, Solak, and Kanık, 2022); (Jackson and Ortego-Marti, 2022) showed an increase in global unemployment ranging from 6 million ("optimistic" scenario) to 25 million ("pessimistic" scenario) Libal *et al.*, 2021; Suomi, Schofield, and Butterworth, 2020).

Labor supply is diminishing due to confinement procedures, and a decline in global economic activities was noted. Kozicki and Gornikiewicz (2020) submitted that infected workers lost their income, especially part-time, contractual, as unprotected workers. The influence on employment resulted in significant losses of revenue. Overall labor income losses are expected to reach a trillion dollars. The loss of labor income directly translated into lower consumption. This decrease in sales is detrimental to organizational sustainability and the resilience of economies (Uluğ, Solak, and Kanık, 2022). Poverty among workers increased significantly (Caperna *et al.*, 2022). The strain on incomes due to the decline in economic activity brought employees closer to or below the poverty line. Besides, employees are becoming victims of burnout due to devastating consequences of the pandemic. The Covid-19 health crisis will cause lasting upheavals in the labor market (Caperna *et al.*, 2020).

Carey *et al.* (2021) noted a significant economic impact tested in cybersecurity. The education sector was affected by health restriction measures. Providers of education, schools, and universities suffered from the start of the pandemic as public places. Malicious actors took advantage of remote work to intensify social engineering campaigns and phishing attempts, mainly using keyword lures related to the coronavirus (Jackson and Ortego-Marti, 2022).

Organizations were forced to be acute in their crisis management strategies to sustain during the pandemic. As a result, organizations developed proactivity to take advantage of new opportunities, face challenges and endorse organizational and cultural change. Socially responsible business models have proven to be fascinating to captivate adaptation in the context of recurring crises through their constant search for sustainability and focus on their vision (Jayaraman and Mishra, 2022). Corporate culture improved environmental and social performance. Organizations with a robust corporate culture founded on entrenched values show higher resistance and adaptability during the entire phases of Covid-

19 spread. Consequently, flexibility, dexterity, proactivity, resilience, innovative capabilities, and the implementation of societal, environmental, and governance standards are considered durable organizational values and constitute practical foundations of corporate culture (Gonçalves *et al.*, 2021).

According to Kozicki and Gornikiewicz (2020); Uluğ, Solak, and Kanık (2022), "post-Covid" cultures are grounded on goals shared by stakeholders. This culture goes beyond economic performance. With A, this culture will be emancipatory by integrating moral criteria. To Bennett and McWhorter (2021), organizations need new types of leadership with the capability of adapting and learning to activate transformations in innovation. Paluszak *et al.* (2021) affirmed that the organizational refocusing strategy on innovation resulted from the need to adjust during this crisis. Mascolo and Burbach (2021) offered a corporate culture based on innovative and creative practices. De Clercq and Pereira (2021) insisted on the importance of creativeness. For Benitez *et al.* (2022), experienced digital leadership is a crucial success factor in leveraging innovation. Executive teams have demonstrated unprecedented mobilization and adaptability to maintain customer service while protecting employees (Hapha and Somprach, 2019). Organizations are looking to adapt quickly. Building resilient supply chains and implementing actual conduct to interact with and serve customers are priorities (Fatima *et al.*, 2021). Financial and operational challenges are maneuvered to stand out during pandemics.

Therefore, organizations must take a supple and flexible approach, combining a relaxed attitude with onward solid planning. Diverse leadership styles and strategies should be implemented to achieve goals to ensure potential solutions to face crises (Dwiedienawati *et al.*, 2021). Contingency plans are organized to meet the new challenges post-pandemic, continuously fluctuating. Talented and proficient leaders in the post-Covid are those leaders possessing the confidence to evolve organizational innovation strategies. Leaders with the ability to adopt a flexible approach have the resources to undertake crisis changes and plans (Wahyu Wasono Miharjo and Sasmoko, 2020).

1.1. Research Gaps

Research on innovation as a consequence of leadership is somehow limited. There is a lack of empirical work in this area, notably those studies integrating satisfaction as a mediating variable. Digital leadership and innovation are among the avenues to be explored. Few researchers have explored the influence of digital leadership and organizational leadership until recently. Understanding the association between this type of leadership and innovation helps fill the theoretical gap. This research aims to explore answers to the problem of lack of innovation through the mediating role of employee satisfaction. This paper will attempt to understand the factors that drive digital leadership. It aims to enrich the literature on behavioral concepts to improve organizational competitiveness. This research focuses on enhancing corporate innovation.

This paper contributes to digital leadership literature by adopting a multilevel framework and studying how leaders enhance satisfaction and product innovation. Furthermore, the contributions align with the recent literature on digital

leadership adopting a multilevel framework. The integration of employees' satisfaction into the analysis is echoed in the literature by Jayant and Suji Raga Priya (2021); Lyng *et al.* (2021); Scheepers and Bogie (2020), suggesting that models are simple to reflect the relationships examined in leadership innovation related research accurately. A significant implication is an opportunity to test the problems associated with constructing a multilevel model. Therefore, it helps to identify the theoretical arguments that validate the emergence of employee satisfaction as mediating variable. It constitutes a starting point for further empirical study.

1.2. Problem Statement

Since 2020, organizations have been experiencing an unprecedented situation linked to the global pandemic, bearing distressing obstacles. This crisis incorporated a human, technical and financial challenge (Chong and Duan, 2022). The pandemic has had a devastating effect on satisfaction, motivation, and innovation. The ability to keep employees satisfied motivates them to create innovative ideas and contribute to the implementation of strategies for innovation (Mbogo, 2020).

The current crisis has prompted an active debate on the managerial functions and duties due to social distancing and teleworking. The discussions were more intense on the implementation of organizational innovation and performance. Managers face innovation problems due to social distancing and a lack of managerial follow-up and leadership (AlAjmi, 2022). Those imposed challenges cannot be escaped. Confronting them implies direct actions. Therefore, digital leadership is a lever of creativity and innovation (Antonopoulou *et al.*, 2021a).

In this context of uncertainty, where all companies seek to adapt and initiate profound transformations to survive, digital leadership has become one of the pillars in response to the innovation challenge. Organizations are trying to strengthen their innovation capacity through leadership and satisfaction to seek sustainable prosperity. The success of organizational innovation hinges on the leadership style of its representatives. Hence, an in-depth study helps to overcome managerial problems (Susilawati, Suryanto, and Windijarto, 2021).

In addition, the COVID-19 crisis and the adoption of telework have changed teamwork and created communication difficulties that diminish team cohesion. Stress, anxiety, and sometimes burnout have accompanied this crisis. Those behaviors have affected employees' commitment to their organization and weakened their ability to perform job duties. Bartsch *et al.* (2021); Hage *et al.* (2021) added that that behavior caused a progressive depletion of their resources.

Digital leadership styles have considerably evolved and are perceived as a source of satisfaction and a method of developing innovation. Indeed, digital leadership is a process of power-sharing by formal leaders that enhances the autonomy, potential, meaning, and impact of employees and work teams (Lengen *et al.*, 2021).

1.3. Research Questions

Managers need to ponder tactics to meet the challenge of aligning effective digital leadership metrics with innovation.

These should not be rhetorical questions but testable hypotheses to be measured empirically.

1. What is the influence of digital leadership on employee satisfaction?
2. To what extent does employee satisfaction influence the four types of innovation (product, process, human resources, and human resources innovation)?
3. How does employee satisfaction mediate the relationship between digital leadership and innovation factors?
4. What is the influence of digital leadership on innovation?

1.4. Research Objectives

The aim is to study the relationships between digital leadership and organizational innovation. The objectives are as follows:

1. To assess the influence of digital leadership on each dimension of innovation
2. To appraise the relationship between digital leadership and employee satisfaction
3. To understand the role of satisfaction as mediating variable between digital leadership and dimensions of innovation

Organizations are provoked with new leadership challenges as they continue to encounter the influence of the COVID-19 pandemic (Park, 2021). Leaders make instant decisions to deal with changing government requirements and respond to changing customer demands. They are making decisions (Calen *et al.*, 2021).

Disrupted practices of this current disease have emerged the need for exceptional digital leadership. Effective leadership should combine different forms and styles. Wijaya Setiawan *et al.* (2021) called for "crisis leadership." Boukadidi *et al.* (2020) expertly formulated three innovative leadership principles. First, leaders should present and be visible to ease anxiety and uncertainty during the pandemic. Second, frequent team communication provides updates and explains measures to reduce the pandemic's consequences. Third, leaders should opt for honesty to convey truth grounded in reality. The effectiveness of crisis management depends on applying leadership principles to add a dose of flexibility and persistence (Lehr and Vaughan, 2021; Rendo, Au-Yong-Oliveira, and Dias, 2021; Fadillah *et al.*, 2020).

COVID-19 certainly had negative impacts. Nevertheless, this period has presented opportunities for organizational leadership and innovation. Leadership is based on empowering the workforce's aptitude to work together as a team. Recognizing the significance of team spirit elevates the desire to improve leadership (Elias, 2021). Crisis and stress improve team outcomes through exceptional digital leadership. Besides, transformational leaders fiercely protect employees' behavior, promote exchanges and collaboration, and nurture a sense of belonging. Leadership creates trust and respect (Debbay Reiza Macella, 2020).

Leaders can show vulnerability during a crisis. Being open to employees by sharing concerns and goals is an example of honesty and trust. Leadership leaves members of the team with the possibility of giving innovative ideas. Although the crisis had a considerable influence on organizations, leadership qualities are essential and valued during the pandemic. Nevertheless, it is not only leadership skills that will help leaders possess better qualities to face the consequences of the pandemic (Islam, Zawawi, and Wahab, 2021).

This paper is split into two parts. The first part deals with the introduction and the literature review. This part consists of an explanation of the concepts. The theoretical bases developed the conceptual framework. According to past studies and theories, it has simplified digital leadership, employee satisfaction, and innovation types. The second part simplified the research methodology. The results analysis is explained. Finally, recommendations and paths for future studies conclude this study.

2. LITERATURE REVIEW

Leadership ensures continuity in organizations during the pandemic. Organizational success is elevated by leadership and leaders' ability to satisfy and motivate employees to achieve success. Leadership roles include establishing values, building team confidence to face occupational risks, and defining goals. Effective leadership is indispensable for satisfying and empowering team members to work toward an innovative plan. The pandemic significantly positively affects organizations' continuity, namely by increasing their capacity for innovation (Muttaqin, Taqi, and Arifin, 2020). The pandemic stimulated innovation and creativity to face obstacles. The necessary adaptation generates various innovation transformed into solutions to the market evolution.

Organizations have stepped up their technology investments during the COVID-19 pandemic. Large-scale organizations have significantly accelerated their growth compared to their competitors. The study by Ngo, Le, and Doan (2022); Whelehan, Algeo, and Brown (2021); Entress *et al.* (2020) revealed the functions of technology in organizational success. The leadership allowed organizations to survive and thrive during this disruptive period. Adapting to change is one of the characteristics of leadership for corporate survival. Beyond simple adaptation, leadership is expected to be able to understand the circumstances to be able to make the right decisions to ensure continuity in organizations. It allows them to provide practical solutions during the rush of Covid-19 outcomes (Nugroho *et al.*, 2021).

2.1. Leadership

Leadership embraces an individual's ability to satisfy, motivate, and influence others to contribute to adapting innovative performance. Leadership refers to this ability to lead. Concentrating on the leadership role contributes to employees' satisfaction and innovation. With natural authority, knowing how to inspire trust makes a leader easy to impose on teams (Negoro and Wibowo, 2021). The role of leadership is to look after the workforce's interests and takes initiative steps. Leadership motivates associates to carry out innovative tasks with personal influence and great persuasion power. A leader must have a sense of listening to get the

most out of teams. Leadership must recognize employees' needs and analyze difficulties, skills, aptitudes, and values (Antonopoulou *et al.*, 2021b).

Leadership is a procedure to achieve a common goal. The mission of leadership is to combine employee well-being, group cohesion, and productivity. Leaders offer a vision by promoting cohesion between individuals, personal development, job satisfaction, and innovation. Leadership can be distinguished from the traditional manager (Gerada, 2021). The latter plans, organizes, and controls without necessarily proposing an attractive future for colleagues. However, leadership is characterized by constant follow-up and feedback. Leadership tends to eliminate bureaucracy (Chanmugam, 2021). The ability to satisfy employees is essential. Leadership ensures that relations with employees are in good shape. Empathy and communication are imperative (Yokus, 2022).

Leadership characteristics are based on the fact that leaders must love their duties and know that success does not come by itself. This characteristic is an invitation to lead by example, motivating and inspiring. Salary alone cannot be a motive, and it is certainly not enough to retain human talents. The leader is fundamental to motivating agents to stay in the organization. Good leadership can be translated into superior performance, motivated employees, and greater competitiveness (Aherm and Loh, 2021). These added factors result in increased innovation.

Leadership studies identified individual and situational variables that favor leader performance over followers. However, authors have regularly called for using a multilevel framework in leadership research (Dirani *et al.*, 2020). The adoption of both an individual and a collective perspective improves this construct. The integration of different types of leadership concretely responds to managerial concerns. Leadership is guiding and motivating individuals and teams. Leadership is managing team members, individually and collectively, to achieve innovative performance beyond expectations.

Several elements lead researchers to consider a multilevel framework. For Caringal-Go *et al.* (2021), leadership is a multilevel phenomenon inherent in the very concept of management. Consequently, it is vital to address leadership issues in a multilevel framework. As Dwiedienawati *et al.* (2020) pointed out, "working at multiple levels sheds light on the individual procedures, particularly innovation. It identified the personal characteristics, behaviors, attitudes, and perceptions that underline and form the organizational structure. Finally, it highlights the actions that organizational actors must undertake, individually and collectively, to obtain corporate profits (Daraba *et al.*, 2021).

2.2. Digital Leadership Presence During the Pandemic

The constricting elements imposed by the health crisis seem to be catalysts for a new virtual corporate sociability. The renewal of organizational routines revealed a new collective need for digital leadership through a developed configuration of a new corporate culture. Digital leadership is at the heart of innovation and teleworking practices (Hafiza Hamzah, Khalid, and Wahab, 2021). The epidemic has been a critical

motivational facet to adapt digital organizational leadership and technologies to ensure success and continuity.

For Strielkowski *et al.* (2022), workforces and teams have high expectation on digital transformation. They are anticipating an enhanced alignment with their values to leverage productivity and organizational opportunities. In contemporary working environment, executives are concentrating on the implemented leadership style. Those official leaders are emphasising effective tools, techniques, and digital technologies adoption to support consumers, employees, and investors feel valued (Karakose, Polat, and Papadakis, 2021).

Defining KPIs to lead an effective digital leadership transformation is as important as determining which KPIs drive an effective innovation revolution. According to Permana *et al.* (2021), organizations are moving towards hybrid and dispersed leadership types. Farrell (2021) explains the transition from charismatic leadership to a transformational and distinguished digital leadership style. According to Muttaqin, Taqi, and Arifin (2020), organizations must juggle between leadership styles. Damayanti and Mirfani (2021) indicated a positive relationship between learning and digital leadership. Dewi and Sjabadhyni (2021) stated that digital leadership should be retained in the era of post-Covid. Jayaraman and Mishra (2022) promoted leadership through satisfaction and trust. Houlihan (2020); Caperna *et al.* (2022) favored the triptych leadership, satisfaction, and innovation.

Leadership has a momentous influence on the efficiency of goal achievement in organizations. Digital leadership ensures organizational continuity. The use of digital leadership is highly accurate in remote work, notably for individuals having significant responsibilities away from the workplace and possessing a critical function in decision-making. The query of digital leadership is crucial. It involves an interface procedure of communication between leaders and followers where the leader influences followers to achieve an innovative goal. The role of digital leadership is vital. It can affect the work system of the organization and employees (Xanthopoulou and Plimakis, 2021).

In managing innovation, an approach of digital leadership inspires creative thinking. Big ideas, original products, and breakthrough ideas shouldn't restrict innovative tools. It embraces a contribution by smaller ideas that benefit employees daily (Laufer *et al.*, 2021). Accordingly, digital leadership intends to focus on online research and development. It brings a new idea to life and turns it into a procedure. Therefore, digital leadership is an essential resource for organizational continuity. Individuals exhibit prosperity through a wide range of talents and qualities. Therefore, effective leadership can affect subordinates' satisfaction and sustain organizational continuity (Kozicki and Gornikiewicz, 2020; Uluğ, Solak, and Kanik, 2022).

2.3. Employee Satisfaction

Employees place job satisfaction among the top reasons for staying with a company. Working in good conditions is a significant matter for both employees and organizations that employ them. Leaders are constantly looking for innovative methods to improve employee satisfaction and ensure their well-being. Satisfaction is delineated in the working envi-

ronment as a positive psychological state of an individual (or an employee), which translates into a desire to satisfy a need (Boone, 2021). When employees are "satisfied," they invest in themselves and feel pleasure in carrying out simple or complex tasks. Satisfaction remains an affective and emotional response positioned on job analysis, description and managerial methods of supervision (Al-Fakeh *et al.*, 2020).

Employee satisfaction is an essential aspect for productivity and innovation. It is an asset for the entire organization. To measure their level of satisfaction, employees make a comparison between their professional experience and their needs. Satisfied employees stay with the organization longer. Retaining innovative employees can reduce overhead costs and increase profitability (Wolter *et al.*, 2019).

In the management literature, many authors have established that job satisfaction results from an individual's evaluation of the work environment, climate, level of responsibilities, and power. Job satisfaction results in superior organizational commitment and improved performance (Strenitzerová and Achimský, 2019).

Knowing these satisfaction determinants will improve employee satisfaction and, ultimately, their productivity at work. Elrehail *et al.* (2020) verified that the measurement tool adapted to multiple measurement scales highlights four dimensions to assess employee job satisfaction: passion, loyalty, involvement, and commitment. Even if some authors argue that this concept is outdated, job satisfaction remains a needed research area in human resource management. Satisfaction is either intrinsic, extrinsic, or universal. Few studies have attempted to explain high and low exchange quality satisfaction (Jing *et al.*, 2019).

Internal surveys and the collection of feedback are compulsory for leaders and managers. Surveys of internal opinion positively assess employee satisfaction, commitment, and retention. Employee satisfaction is not only an indicator of serenity. It is proven to be a lever of responsibility through the quality of work life and a driver of organizational performance and success. Dissatisfied employees equate to a strong tendency for teams to "complain" and lower morale. A high rate of dissatisfaction leads to career stagnation. The deterioration of quality of life at work added to a deficiency in bad decisions taken by leaders and managers (lack of motivation, dismissals from critical tasks), leading to a decrease in dissatisfaction and a decline in the rate of productivity (Ko and Choi, 2019).

Concerning innovation, organizations must emphasize employees' ability to innovate. The latter helps accomplish anticipated organizational success. Moreover, some studies show that innovative behavior impacts business performance. Furthermore, employees consider creative activities an excellent way to cope with heavy workloads. Innovative behavior allows them to adjust to working demands by intentionally creating new ideas (or processes, products, procedures) to introduce and apply in their daily tasks (Barakat *et al.*, 2016).

The studies of Becker, Cardazzi, and McGurk (2022) have focused on the influence of digital leadership style on employee innovation. Besides, Pramono *et al.* (2021) highlighted that leadership leads to the adoption of innovative behav-

iors. However, few studies have addressed the mediating role of employee satisfaction enabling leadership to improve innovation and creative behaviors.

Satisfaction maintains the fluidity of operations, productivity, and the capacity for innovation (Čuček and Kač, 2020). In a professional framework, satisfaction is measured by commitment and moral involvement in a mission. The rate of organizational commitment, whatever its size or its activities, is an essential factor of innovation since it directly impacts performance.

Committed employees involved in the “production chain” understand planned tasks through communication. Otherwise, employees risk feeling dissatisfied due to the ambiguity of required obligations. The objective is to ensure satisfaction from integration into the value chain. Satisfied employees contribute to implementing innovation if the latter is integrated into production (Houlihan, 2020).

Stress and anxiety related to COVID-19 generated significant devastating effects on employees. Organizations have been encouraged to adopt teleworking using a variety of technological means. Telecommuting and remote work increased the feeling of dissatisfaction due to home isolation (Abilash and Mary Siju, 2021). Impersonal communication engendered substantial and socially diluted tasks.

Working from home can increase or worsens employees’ job satisfaction. Remote work, for instance, online teaching significantly negatively influenced different educational aspects and increased both students’ and teachers’ dissatisfaction. From a theoretical perspective, Chandra Putra *et al.* (2020) have tested that teleworking is a double-edged sword with negative and positive effects. On the one hand, Hashim *et al.* (2020) proved that increased flexibility in working hours has a positive influence. On the other hand, Rahman and Zahir Uddin Arif (2021) deduced that the lack of direct interaction between co-workers and superiors negatively influences satisfaction. Empirically, researchers are still verifying the long-term effects of working from home on job satisfaction.

2.4. Innovation

Innovation is a systematic challenge for modern organizations. A single definition of innovation doesn’t exist since various perspectives exist on this concept. For Vagnani, Gatti, and Proietti (2019), innovation stems from a novel good/service launch, the implementation of a original production technique. It also embraces strategies for new market entry, and new raw materials usage.

Innovation is executing novel good or service, process, and marketing procedure (Zhang *et al.*, 2019). For Rajan, Dhir, and Sushil (2021), innovation is a procedure to implement one or more products, services, and processes. Innovative ideas should satisfy stakeholders’ expectations implicitly and explicitly. Innovation is a source of value generation for the society, environment, and the economy.

Innovation creates a justifiable competitive advantage. It provides direct solutions to meet consumers’ desires, and needs. Innovation is essential due to increased competition and customer demands. The development of investments and activities in innovation leads to gaining market share, in-

creasing revenues, and reducing costs and profitability. Innovation is a source of organizational sustainability. Four elements are essential to measuring innovation. First, innovative resources are controlled by the organization. Second, managerial capacities determine innovation activities. Fourth, staff skills and human resources approach measure innovation. Fifth, developing and using technological tools and data resources are becoming increasingly important for innovation (Makgopa, 2021; Damanpour, Sanchez-Henriquez, and Chiu, 2018).

De Clercq and Pereira (2021); Benitez *et al.* (2022) showed very few organizations devote a budget to innovation. The acquisition of innovative machinery and equipment is a significant concern for organizations, in addition to innovative software and employees training in innovations.

From a managerial perspective, innovation is a continuous approach to the organization’s competitive strategy. In other words, it is a long-term process required by managers. According to the marketing approach, innovation originates from a new output intended for the market. Similarly, Calen *et al.* (2021) defined innovation capacity as a continuous improvement of the company’s skills and resources to explore or exploit opportunities for developing a new product that satisfies market demands. Finally, according to the black box approach, schematized by Elias (2021), innovation requires the realization of several successive stages.

The costs of the innovation activity evaluate the feasibility of the innovation. Expenses may include various expenses such as expenses related to R&D activities, knowledge management, and the acquisition of patents, licenses, and registered trademarks.

Dwiedienawati *et al.* (2021) proposed two measures for gauging innovation. Measurements include R&D expenditure and issued patents. For Dwiedienawati *et al.* (2021), R&D is the most important indicator for measuring innovation activity. According to Antonopoulou *et al.* (2021a), R&D expenditure is an investment aiming to produce a product. Thus, R&D expenditure represents the financial effort invested in innovation activities. Examining R&D expenditure, therefore, seems to be most suitable for measuring the input associated with innovation activities. According to Caperna *et al.* (2020), organizations group innovation activities under the label R&D and independently monitor the resources used. Therefore, the R&D expenditure makes it possible to look at all the revenues from the innovation activities of large companies. According to Kozicki and Gornikiewicz (2020), publishing patents makes it possible to measure the production of new products, defined by Calen *et al.* (2021) as contemporary practices. Three main elements distinguish innovation. Elements are the product, the process, and marketing. Finally, Pramono *et al.* (2021) added HR innovation to those elements.

2.4.1. Innovation Significance

Resource availability influences the organization’s ability to attain its objectives by carrying out different types of activity, including innovation (Vincenzi and da Cunha, 2021). The workforce’s tangible and intangible assets (including intellectual capital) and accumulated experience are the cornerstones of innovation. Innovation is crucial to ensure organi-

zational continuity during a crisis. The size of an organization is often one of the elements used to assess its innovation activities and propensity to innovate (Fatemi *et al.*, 2022).

Organizational prosperity is influenced by its ability to conduct activities, implement innovations and deliver results. Organizations are profitable and hold a high share of their capital when the return on investment in innovation is guaranteed. A company's internal sources of finance are another critical driver of innovation. Scholars identified a variety of management practices and capabilities affecting innovation. These practices focused on two fundamental aspects: on the one hand, the competitive strategy and, on the other hand, the organizational and management capacities to implement it (Francis *et al.*, 2021).

2.4.2. Innovation Factors During the Pandemic

The health crisis implied an obligation for organizations to constantly nurture their innovation potential. Innovation prospects depend on three critical factors. First, the quantity and quality of resources (Ong *et al.*, 2021) (technical, human, and financial) mobilized by organizations to innovate. Second, the organization of resources has to activate internal learning processes and acquire, integrate and protect information. Third, managerial know-how favored access to innovation (Pradana *et al.*, 2021). Experience is added to innovative prospects gained during the pandemic to leverage market position. Those factors lead to increased knowledge, proficiencies, expertise, and skills.

Those factors are used in the innovation of products, human resources, marketing, and processes. Organizations are encouraged to practice a combination of different types of innovation. One kind of innovation leads to another. Product innovation alters production methods and rules to process and organizational innovation. Roman (2021); Purba *et al.* (2021) admitted that a process change was noticed following the adoption of an innovation. Human resources, marketing, and product innovation are the most practiced types during the pandemic. The pandemic pushed organizations to combine innovative practices rather than adopt innovation alone. Kristinae *et al.* (2020); Ryan *et al.* (2021) extracted in their studies that the removal or a simple decrease in product innovation from the combined innovative factors leads to a drastic drop in incremental innovation. Therefore, Wiji Prasetyo and Imanda Firmantyas Putri Pertiwi (2021); Galanakis *et al.* (2021) concluded that product innovation could be considered the first impulse of innovation.

2.4.3. Four Types of Innovation

Customers' experience is at the center of innovation. Differentiated innovation types help consumers become familiarized with new products through innovative marketing strategies. To meet their expectations, creative processes are used to correct innovation defects encountered as quickly as possible (Satell, 2017).

Social networks are critical tools for ensuring brand innovation. Posts on Facebook and Instagram provide awareness and perception of customers buying behaviors. Valuable information and criticism of innovative products/ services are initiated from those platforms. Collected information through customer surveys contains clues about potential

markets. Those surveys analyze customers' marketing data for innovative product characteristics and features (Oliva *et al.*, 2019).

A found that innovation is located on a continuum of which incremental and radical innovation would be the two extremes. Oliva *et al.*, (2019) refined this typology by distinguishing three criteria to qualify the degree of novelty: the perception of users, the degree of originality, and the modification induced (Bahr, 2019). Innovative activities vary depending on whether organizations compete primarily on price or quality. Consequently, organizations focusing on quality are more likely to develop new product innovations for the market, and those focused on price focus more on highly efficient processes (Oanh, 2019). It is recommended to collect data on cost and quality in competitive strategy by first establishing the extent to which organizations focus on products' price (cost competitiveness) to understand the strategic orientations of innovation. Second, it permits organizations to focus on qualitative characteristics (for instance, functionality, lifespan, and flexibility) (Corrales-Estrada, 2019).

2.4.3.1. Product Innovation

Depending on the degree of innovation, two primary forms of product innovation can be distinguished (Qi *et al.*, 2020). On the one hand, the design of up-to-date products. On the other hand, improving existing products' performance takes the form of progressive or incremental innovation (Han and Zhang, 2021). The latter is related to radical product innovation.

Innovation is concerned with goods leading to substantial alteration and revolution in the production technical features (machineries, ingredients, integrated software). Another element to be considered is the commitment to improve products, introduce new ones or adapt them to customers' requirements. In addition, in the case of a quality-oriented competitive strategy, attention should be paid to the place given to branding activities to differentiate the products from those of competitors (Xie, Huo, and Zou, 2019).

Choosing between serving a single product market or addressing several markets is a strategic decision, as greater diversification can promote innovation. In general, organizations serving multiple markets benefit from more opportunities and have more significant needs in terms of innovation than companies that focus on a single product market (Ben Arfi and Hikkerova, 2021).

2.4.3.2. Human Resources HR innovation

Innovation in HRM pushes implementing a new method to optimize daily practices. Human resource management practices can influence an organization's ability to leverage its creative potential and skills. HRM practices are conducive to innovation and achieving goals (Mauro and Borges-Andrade, 2020). Human resource management practices potentially conducive to innovation include creative recruitment, training, and skills development. Performance appraisal is correlated with innovation ideas and is associated with developing innovations and incentives. Opportunities for promotion and career advancement motivate performance (Sugianto and Hartono, 2017).

Human resource management policies can contribute indirectly to improving the results of innovation by reinforcing the feeling of satisfaction and loyalty of employees. Policies support the flexibility of time and place of work (flexible hours, teleworking) and initiatives with a social aim (policies allowing to reconcile personal life and professional activity) (Nieves and Quintana, 2018).

2.4.3.3. Process Innovation

Process innovation is instigating an execution of enhanced manufacturing process or distribution technique. This notion implies effective techniques, hardware, and software changes. Chirumalla (2021) agreed that innovation processes are the rationalization of the imagination. Process innovation relies on developing or improving the production scheme (employment of new machinery, advanced software application) or distribution.

The imagination or creativity of innovative processes is nurtured and fueled by employees. Leaders rationalize creative ideas and transform them into strategies to take advantage of them. Studying the financial, economic, and technical feasibility and studying the market is the second part of the innovation process to review its novelty. Innovation is constantly confronted in the last instance with profitability, which can be more or less long-term, but guides the innovation process (De Giovanni and Cariola, 2021).

2.4.3.4. Marketing Innovation

Innovation is inseparable from the marketing approach to such an extent that a new field called “innovation marketing” has emerged. It is declined in the marketing mix, 4 P or 7 P. In addition to the traditional role of marketing, organizations closely monitor innovative products, promotions, and advertising (Purchase and Volery, 2020). Marketing innovation aims to open new markets to improve the organization’s position relative to competitors. Marketing assesses marketplace potential to measure as accurately as possible possibilities of product development. Marketing innovation success depends on the analysis of market needs. Hence, innovation creates a differentiation power based on the pillars of the marketing mix (Ding and Li, 2021).

Innovative marketing strategies focus on designing offerings to offer solutions to solving customer problems. In marketing, innovation is translated into a prior identification of market opportunities. The invention in the marketing process is implemented using the three strategies translating innovation into success. First, it leads to identifying opportunities to seize the market. Second, customer problems are deciphered following marketing surveys. Third, executives design unique offers to create a competitive advantage. Finally, the product/market fit strategy is the outcome of innovation (Cuevas-Vargas *et al.*, 2021).

2.5. Past Studies

Leadership in digital culture illustrated by Gorgenyi-Hegyey, Nathan, and Fekete-Farkas (2021) exemplified a strong correlation between digital leadership and innovation. Organizations following a strict application of digital leadership, emphasizing human resource management tasks and regular

feedback, confirmed that workers are pleased with their position and understand the value of their contribution. Organizations adopting this culture have noticed an increase in innovation. Regular coaching and feedback have sustained satisfaction. In organizations where managers believe in the culture of leadership through people-oriented tasks, such as coaching and feedback, they ensure both satisfaction and motivation.

Atikah and Esti Riwayati (2021); Dwyer *et al.* (2021) illustrated the economic significance of employee satisfaction. These studies showed that effective leadership is an important motivating factor to innovation than financial compensation. The culture of innovation is a critical success factor for innovation. Managers assume the essential function. Employee satisfaction increases if a spirit of leadership embraces those managers by transferring decision-making power, giving regular feedback, and valuing employees’ ideas. Consequently, the capacity for organizational innovation increases considerably (Gouda, 2020).

Organizations with a culture emphasizing innovation are implementing innovative ideas. Corporate culture, therefore, plays a significant part to create and develop inventions. However, innovation constitutes a crucial “axis” of the corporate culture by its strategic importance. Innovation development involves many risks and challenges, a context likely to exacerbate penalties of changing behaviors and organizational procedures (Aristana, Arsawan, and Rustiarini, 2022).

2.6. Research Hypotheses

The literature review on the associations between leadership, employees, and innovation raises empirical questions that deserve further investigation. Indeed, studies that have examined leadership and its association with innovation have limitations. Jackson and Ortego-Marti (2022) underlined the existence of an association between those variables but highlighted that employees’ perception of those concepts constrains this relationship. Indeed, those studies provided answers specifying a positive relationship between leadership and innovation. Moreover, explicitly centered these links on a specific relationship between the corporate culture of digital leadership and innovation (Bennett and McWhorter, 2021). The conception of innovation through employee satisfaction is underdeveloped.

2.6.1. The Link Between Digital Leadership and Employee Satisfaction

Leadership is a central managerial notion. This concept embraces the capacity to lead other individuals toward achieving organizational objectives (Alsolamy, 2021). The leader sets an example for employees, shows the way, ensures their satisfaction, and motivates them to give their best (Barasa and Kariuki, 2020).

Leadership maintains a harmonious relationship with the work team and succeeds in involving employees in decision-making. The latter holds employee satisfaction through the personalization of goals. Besides, the relationship between the leader and subordinates determines satisfaction or dissatisfaction at work. Leadership is illustrated by social exchange theory (Khan *et al.*, 2020).

Training is an effective method to transform employees into leaders. Training future leaders is an HRM strategy to benefit from internal resources to improve employee satisfaction, develop leadership capacities and establish solid and lasting relationships between employees. Leadership adapting mentoring programs facilitates the transfer of knowledge between employees, especially those from different generations. This approach effectively upholds employee satisfaction when career development opportunities or promotions arise (Munfaqiroh, Mauludin, and Suhendar, 2021).

P.Haan (2021); Arnett (2021) promoted that servant leadership increases employee satisfaction and, therefore, the quality of life at work. According to Mikhael (2021); Chen, Ding, and Li (2022), employees' satisfaction reflects their physical and psychological well-being. Employees in tune with work objectives are productive and beneficial for the continuity and prosperity of the organization.

Satisfied employees consider working for the organization as a team directed by influential leaders and a clear leadership strategy. The workforce has a higher ability to be integrated into performing groups. Therefore, satisfied employees are motivated to accomplish future visions and contribute to executing prospects for development. Dissatisfied employees are disengaged from the organizational mission and show low commitment. It isn't elementary to progress and sustains the continuity of organizations (Almohtaseb *et al.*, 2021). Consequently, the first hypothesis is constructed.

H1: Digital Leadership and Employees' Satisfaction

- **H1.0:** Digital leadership does not significantly influence employee satisfaction.
- **H1.a:** Digital leadership has a significant influence on employee satisfaction.

2.6.2. Employee Satisfaction and Product Innovation

Product innovation depends on cutting-edge innovative technologies and production techniques. Satisfied employees are adequately involved in innovation activities. The indirect role of satisfaction helps implement product innovation (Dirani *et al.*, 2020). Significant changes in product innovation continue to be a logical consequence of satisfaction.

Innovation inputs include internal and external factors promoting innovative outputs. Innovative inputs and outputs can distinguish contributions to employees' satisfaction. The study of Hrnjic and Djideliija (2018) showed that satisfaction is an innovation stimulator following research, development, and technology push. Okoe *et al.* (2018) measured satisfaction outputs by introducing innovative products, the change or the significant improvement of production methods, and the intensity of these innovations measured thanks to employees' contribution.

Executives with diverse skills define the absent jobs. Managers are distinguishing managerial and research activities. The latter are discovered using innovative strategies and the appearance of an R&D department. Definitely, research and development (R&D) teams establishes innovation foundations and tactics. R&D team are seniors with previous experience in the field. Employees who flourish and evolve are satisfied (Chen, Leung, and Evans, 2016). Therefore, those

employees are involved in innovating the quality of products. Similarly, when employees are placed in favorable conditions, it will be easy for them to produce higher-quality products. Consequently, the second hypothesis is constructed.

H2: Employees' Satisfaction and Product Innovation

- **H2.0:** employee satisfaction does not significantly influence product innovation.
- **H2.a:** employee satisfaction has a significant influence on product innovation.

2.6.3. Employee Satisfaction and HR Innovation

Personal and professional life balance affects employees' satisfaction and well-being at work. Indeed, employee satisfaction is linked to the quality of life at work. Those strategies are part of human resources innovation. Preserving employees' well-being maintains the proper functioning of the organization. Employee satisfaction is ensured by a pleasant and safe working environment and is supported by innovative human resources strategies (Han *et al.*, 2020).

Creating an excellent working atmosphere is a targeted organizational tactic in attaining innovation. Dispensing employees with technologies motivate them to give their potential. In conclusion, HRM can assess employees' satisfaction with working on their innovative strategies and increase employee satisfaction. Human resources managers can choose the most suitable method following the work environment and teams. Human resources managers can harmonize innovation with production, organization, marketing, and innovative procedures. Indeed, the employee is a basic configuration of HRM innovations (Barakat *et al.*, 2016).

HR experts set up a cultural system favorable to innovation. Technological scheme is structured on employee's awareness and knowledge to its implementation. It focuses on employee qualification processes, training, and communication between them and management. The team leverage their interest in customer desires. Employees are attentive to innovation obstacles. To sustain continuity in innovation and generate an innovative culture, HRM should always follow up on employee satisfaction to ensure the implementation of innovative strategies. This relationship presupposes the presence of satisfied and competent personnel (Strenitzerová and Achimský, 2019). Consequently, the third hypothesis is constructed.

H3: Employees' Satisfaction and Human Resources Innovation

- **H3.0:** employee satisfaction does not significantly influence human resources innovation.
- **H3.a:** employee satisfaction has a significant influence on human resources innovation.

2.6.4. Employee Satisfaction and Process Innovation

Employee satisfaction is a tool for managing process innovation. Organizations need an innovative process to bring ideas into the world. Creative processes help move projects from conception to action. This move is encouraged by satisfied employees to share their thoughts and transform them into

concrete results. Employees' satisfaction contributes to the effective implementation of process innovation (Lasisi *et al.*, 2020). Satisfied employees are creative, share ideas, and fuel process innovation. Results are often promising. Creativity and innovation suffer when employees are dissatisfied. Teamwork and collaboration leverage the idea off the ground. Process innovation can arise among the most satisfied employees. Consequently, the fourth hypothesis is constructed.

H4: Employees' Satisfaction and Process Innovation

- **H4.0:** employee satisfaction does not significantly influence process innovation.
- **H4.a:** employee satisfaction has a significant influence on process innovation.

2.6.5. Employee Satisfaction and Marketing Innovation

Employee satisfaction is a central point that should not be overlooked within marketing innovation. Indeed, the opinions and ideas of employees are valuable levers of innovation and marketing competitiveness. Maintaining employees' satisfaction can revolutionize marketing and its innovative ideas. Innovation is a leadership task. Leaders have realized that creative ideas come from the most satisfied employees. Organizations rely on an R&D department to drive innovation but focus on employees' satisfaction to enhance their marketing innovation (Tsai and Yen, 2020).

A study of the cross-sectional influence of crisis showed that an increase in productivity was explained by positive variation in job satisfaction. Therefore, working from home increases job satisfaction, which in turn has a positive consequence on productivity. On the opposite side, working alone from home has resulted in a loss of interest and decreased productivity (Hashim *et al.*, 2020) due to the absence of direct supervision and feedback. However, Yu and Wu (2021) found no evidence that Covid-19 and the change in the workplace affected job satisfaction by facilitating the transition to telework and ensuring a balance between work and leisure time.

The deterioration of work-life balance is the most explicit bias that counteracts the positive influences of teleworking. In addition, Rinaldi and Riyanto (2021) found that the health crisis negatively impacted the deterioration of relations with employees and superiors. This finding is noteworthy, as previous analysis shows that digitalization had a negative effect on job satisfaction through difficulties in communication and interaction with colleagues and managers. Safuan and Kurnia (2021) suggested that digitization decreased employee satisfaction. Consequently, the fifth hypothesis is constructed.

H5: Employees' Satisfaction and Marketing Innovation

- **H5.0:** employee satisfaction does not significantly influence marketing innovation.
- **H5.a:** Employee satisfaction has a significant influence on marketing innovation.

2.6.6. The Mediating Role of Employee Satisfaction

Due to forceful competition, and the constant alteration in consumers' requirements, satisfaction of workforces is a

fundamental facet for success and organizational continuity. Innovation is regenerated. Innovations allow us to gain a foothold in the market. The most critical factor for an organization's innovativeness is employees' motivation and commitment. Dissatisfied employees cannot achieve the latter (Yoon and Na, 2018). Therefore, employee satisfaction ensures innovation and competitive advantage and thus contributes significantly to organizational survival (Lasisi *et al.*, 2020). Therefore, employee satisfaction affects each type of innovation. Consequently, the sixth hypothesis is constructed.

H6: Employees' Satisfaction (Mediating Role)

- **H6.0:** employee satisfaction does not significantly mediate between digital leadership and innovation factors.
- **H6.a:** employee satisfaction has a significant mediating role between digital leadership and factors of innovation.

2.6.7. Digital Leadership Influence on Innovation

Investment in radical technological innovations is powered by leadership. Organizational changes accompany these revolutionary inventions. Innovation is a concern of the administrative procedure and leadership style. Productivity advantages have increased. The success of innovations is reinforced by technological novelty. Indeed, victory pushed the innovators (founders) to shape and produce new ideas differently. Through creativity and risk control, organizations create an environment to implement promising ideas (Mascolo and Burbach, 2021). Bold ideas are encouraged.

Innovation comes from technology. The behaviors of both employees and managers evolve as a result of innovation. With radical innovation, behaviors will change because they are based on leadership values allowing workers to develop innovative capabilities. Indeed, the effort underlying innovative projects is organized due to a well-channeled procedure. Employees rely on their creativity and innovative minds to enhance services/goods production and marketing. Leaders coordinating research activities improve innovation (Wahab Ali, 2020).

H7: Digital Leadership and Factors of Innovation

- **H7.0:** digital leadership does not significantly influence factors of innovation.
- **H7.a:** digital leadership has a significant influence on factors of innovation.

2.7. Conceptual Framework

The recent pandemic has emphasized the vital role that human capital plays in sustaining and evolving innovation. The quarantine increased obstacles in working conditions. Those obstacles result from a lack of material resources and training for remote work. An increase in innovation is due to efficiency leadership types, namely digital leadership. Employees' satisfaction mediates this increase. Corporate culture possesses a significant share of methods to leverage the adoption of leadership and innovation. Covid-19 has changed those concepts' theoretical and practical conditions (Eichenauer, Ryan, and Alanis, 2022).

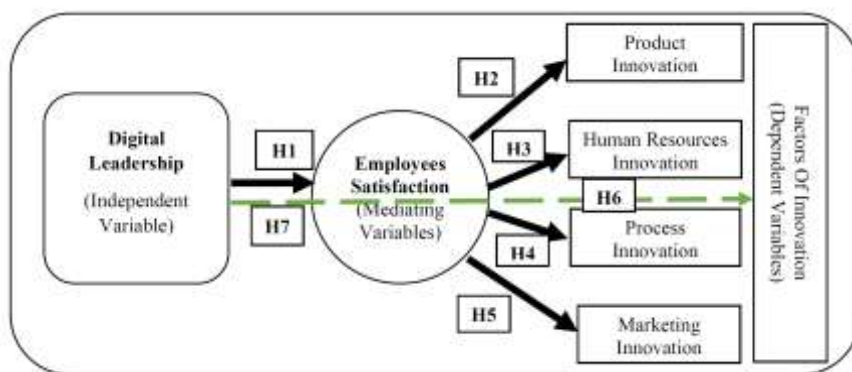


Fig. (1). Conceptual Framework.

Covid-19 has continued to expose the workforce’s capacity to establish dedication, resilience, and commitment. Nevertheless, preserving these capabilities entails ensuring employees’ satisfaction and well-being. Satisfaction is the center of the organization’s value chain. Leadership supports employees in achieving goals and empowers them through special autonomy and satisfaction. Renewing organizational culture to support employees’ satisfaction and sustain the quality of life at work are innovative strategies in human resources management (Sanusi *et al.*, 2020). The change in organizational culture can materialize through digital leadership.

Leaders are trying to adapt and solve challenges resulting from the crisis. A lack of information on organizations’ ability to innovate remains an encountered challenge in the future. However, organizations could quickly adapt and ensure continuity during and after the health crisis. In the post-Covid era, organizations will have to continue to adapt leadership of innovation to face new changes and uncertainties arising in the future. Following the deliberated literature, the conceptual framework is constructed (Caramanica and O’Rourke, 2021).

3. RESEARCH METHODOLOGY

The elaboration of the literature review clarified digital leadership (independent variable) and organizational innovation dimensions (dependent variable). Employees satisfaction functions were introduced and explained as the mediating variable. The quantitative study was carried out in the banking field through a quantifiable survey tool. The questionnaire is a practical statistical exercise to describe and compare the results collected. Inferential data resulting from this tool are verification tests for the research hypotheses. The quantitative analysis depends principally on the research question. The quantitative research explicates and examines hypotheses with statistical analysis. (Saunders *et al.*, 2009) describe the quantitative approach as a technique for collecting or analyzing data producing data that can be processed numerically.

The deductive approach is preferred in this study. Hypotheses are tested after a critical deduction from a grounded literature review. The deductive reasoning is relevant since the research aims to test hypotheses that an organizational culture implementing digital leadership is aligned with the innovation process through delighted employees. Digital lead-

ership strategies company has a positive influence on corporate innovation while aligning it with workforce satisfaction.

Indeed, digital leadership and organizational innovation can be analyzed in numerical numbers through the perception of the bank’s employees. Participants marked their answers on the Likert scale to measure each dimension objectively. In-depth and better-finalized statistics are presented in the findings.

3.1. Data Collection Techniques

A questionnaire is a selection tool collecting primary. The pre-structure questionnaire was given to banks’ employees personally (face to face) to identify their perceptions and behaviors. Six concepts constructed the research framework, and a section dedicated to participants’ demographics formed the evaluation scale. This behavioral-oriented questionnaire was distributed at the end of the corona era (the beginning of 2022). Each participant in this study answered the questions according to a Likert scale. The latter comprises five answers extending from “highly dissatisfied” to “highly satisfied.” This scale is commonly utilized to measure opinions, perceptions, and behavior.

This behavioral questionnaire assessed digital leadership (8 items) based on the taxonomy of (Muttaqin, Taqi, and Arifin, 2020; Supriadi *et al.*, 2020; Pramono *et al.*, 2021). The questions are grouped into one dimension identifying leadership characteristics. For employee satisfaction, nine questions were based on the arrangement of (Eichenauer, Ryan, and Alanis, 2022). Four dimensions classify and identify the innovation in an organization. Twenty-seven questions are subdivided, namely: product innovation (6 items); human resources innovation (6 statements); process innovation (8 statements); and marketing innovation (7 items). The subdivision of the questionnaire will allow us to assess the relationship between digital leadership and innovation, placing employee satisfaction as a mediating variable.

3.2. Participants and Procedure

The participants (n = 283) answered the questionnaires. Sampling was done using the traditional method of face-to-face collection. Participants were employed by the bank when the study was conducted. Ten participants had to be removed from the analyzes due to missing responses. The sampling technique was the convenience sample; partici-

Table 1. Participants Demographics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Age	Between 20 and 25 years	38	13.4	13.4	13.4
	Between 26 and 31 years	76	26.9	26.9	40.3
	Between 32 and 37 years	50	17.7	17.7	58.0
	Between 38 and 43 years	57	20.1	20.1	78.1
	Between 44 and 49 years	61	21.6	21.6	99.6
	Between 50 and 55 years	1	.4	.4	100.0
	Total	283	100.0	100.0	
Gender	Female	134	47.3	47.3	47.3
	Male	149	52.7	52.7	100.0
	Total	283	100.0	100.0	
Position	Non-Managerial Employees	135	47.7	47.7	47.7
	Supervisory Level	46	16.3	16.3	64.0
	Assistant Manager	50	17.7	17.7	81.6
	Managers	50	17.7	17.7	99.3
	Executive Level	2	.7	.7	100.0
	Total	283	100.0	100.0	
Years of experience	Less than two years	34	12.0	12.0	12.0
	Between 3 to 4 years	48	17.0	17.0	29.0
	Between 5 to 6 years	96	33.9	33.9	62.9
	Between 7 to 8 years	102	36.0	36.0	98.9
	More than nine years	3	1.1	1.1	100.0
	Total	283	100.0	100.0	

pants did not receive compensation upon completing the questionnaire. The sample included only employees, so they filled in the metrics for their leaders. It is a cross-sectional correlational study. The descriptive statistics and the correlations between the variables are available in the next section. A first questionnaire was presented to professors specializing in HRM to be face validated and to test its ability to collect data to identify the degree of the coherence of answers and their suitability with the objectives. This questionnaire was prepared to be used for data collection as a pre-test. This pre-test provided tips and instructions for adjustments and then deleted ambiguous items. Then, the distribution stage to all sample members was executed to collect the necessary data. The data were analyzed using SPSS software.

3.3. Statistical Methods

Principal component factor analysis (PCA) is an appropriate method to synthesize information and discover the underlying structure of digital leadership, employee satisfaction, and innovation. Multivariate data analysis method PCA explores the relationships that exist between those variables. The

Kayser Meyer Olkin (KMO) test and the Bartlett sphericity assess its effectiveness. The KMO test must be greater than 0.5, and the Bartlett test must be significant for factor analysis to be feasible.

The exploratory factor analysis is conducted on 283 users ensuring factor structure validity and scale. Then a confirmatory factor analysis was carried out using the AMOS. Scales are subjected to normality tests. To be considered normal, the value of these indicators must approach 0 for symmetry (Skewness) and 3 for concentration (Kurtosis). The multi-normality of variables should be verified using the scales and variables normality of the variables.

Cronbach's alpha analyzed the reliability of the measurement scale. The coefficients should be higher than 0.5. A measurement of the significance of Cronbach alpha values less than 0.60 is insufficient. Between 0.60 – 0.65 is low, between 0.65 – 0.70 is minimum acceptable, and between 0.70 – 0.80 is a good value. However, when these coefficients are more significant than 0.90, the number of items should be reduced.

Table 2. Descriptive Statistics.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Digital Leadership	283	2.75	5.00	3.6564	.51909	.309	.145	.034	.289
Employees Satisfaction	283	2.56	5.00	3.5359	.61592	.107	.145	.164	.289
Product Innovation	283	1.83	4.83	4.0277	.81910	.336	.145	.905	.289
Human Resources Innovation	283	2.17	5.00	3.8009	.68087	.696	.145	.340	.289
Process Innovation	283	1.63	5.00	3.6983	.68767	.630	.145	.157	.289
Marketing Innovation	283	2.14	5.00	4.1348	.50879	.469	.145	.211	.289

Table 3. Digital Leadership.

	1 Component	Cumulative % Eigenvalues	KMO	Cronbach alpha	Sig.
DL2 Executive managers show a greater interest in technologies compared to competitors	.876	65.5%	0.791	0.831	0.00
DL3 Leaders have regularly informed employees about the progress of the new technology implementation and its progress	.896				

4. FINDINGS AND RESULTS

According to the methodology approach, the statistical was implemented using SPSS and AMOS. This section synthesized the main statistical results obtained.

Table 3 established the demographic characteristics of the sample. It has been underlined that 52.7% of the sample are men and 47.3% women. 26.9% of the sample are between 26 and 31 years old, and 21.6% are between 44 and 49 years old. This percentage is followed by 20.1% (61 employees) between 38 and 43 years and 17.7% between 32 and 37 years old. Therefore, employees are young. Table () noted a percentage of 16.3%, which represents the supervisory level, 17.7% is associated with the position of managers, and 0.7% represents the category of executives. 47% have a non-managerial role, which proves that the company gives paramount importance to attracting and recruiting individuals who have high skills.

Regarding the number of years of experience, table (1) signified 36% of the sample have practical experience ranging from 7 to 8 years, and 33.9% have 5 to 6 years of experience. This increase in practical experience is due to the constant evolution and changes in the organizational structure. The majority of participants are experienced in the field.

4.1. Descriptive Statistics

Table (2) presents the descriptive data for the perception of digital leadership, employees' satisfaction, and innovation factors (products, human, process, and marketing innovation).

According to the individuals' perceptions, displayed results show that the average responses concerning digital leadership are between 2.7 and 4.1. this range is compatible and approves the satisfaction of participation. It indicates that answers vary between neutral and highly satisfied points. Besides, the average responses to innovation scales are between 3 and 5. Therefore, participants are satisfied with practices of innovation and applied digital leadership. Employees are satisfied with their ability to perform tasks freely. Regarding the satisfaction items, answers had an average of 3.5, indicating that participants generally answered: "satisfied." Hence, this index explains that their satisfaction is well-noticed in the organization.

The Skewness and Kurtosis indices vary within the normal range. The dimensions of innovation analysis, Product Innovation, Human Resources Innovation, Process Innovation, and Marketing Innovation show that responses are typically distributed. The distribution analysis shows that the answers are generally spread around the mean. Thus, the Skewness and Kurtosis indices are 1.5 and -1.1, respectively. Indeed, the Skewness for employee satisfaction is 0.1 for a kurtosis of 0.16, which implies a normal distribution.

4.2. EFA (Exploratory Factor Analysis)

A factor analysis was performed with digital leadership items to determine if those items correspond to a statistically measured factor. Items were removed to reduce the number of parameters. Indicators presenting the lowest factorial weights were eliminated. Elements with the highest factorial weights for each latent variable were retained.

Table 4. Employees Satisfaction.

	1 Component	Cumulative % Eigenvalues	KMO	Cronbach alpha
ES1 The organization has a clear business plan and shares it with employees.	.743	52.7%	0.733	0.681
ES3 Organizational policies are clear, and you know them	.647			
ES6 For organizations, employee satisfaction, is a priority for the quality of innovation	.599			
ES7 Management respects its commitments to customers and employees within the established deadlines.	.883			

Table 5. Dimensions of Innovation.

	Items	Cronbach alpha	Kmo	Cumulative Eigenvalues%
Process Innovation	3	.961	0.735	63%
Product Innovation	5	.786		
Marketing Innovation	5	.699		
Human Resources Innovation	3	.654		

The results in Table 2.5 on the exploratory factor analysis (with Varimax rotation) regarding digital leadership yield a Kaiser-Meyer-Olkin of .79. Two items measuring digital leadership were retained with a $p < .001$. The alpha coefficient (.83) is excellent. Therefore, one factor represents the perception of digital leadership. The factorial solution explains a total of 65.5% of the variance.

The EFA analysis (with Varimax rotation) for employee performance yielded a KMO of .0.73. Four retained items

measured digital satisfaction with a $p < .001$. Therefore, one factor represents the perception of participants concerning their satisfaction. The factorial solution explains a total of 52.7% of the variance. The alpha coefficient (.68) is satisfactory.

The factor analysis retained four factors with a total explained variance of 63% and a KMO of 0.735. 0.96, 0.78, 0.69, and 0.65 are the respective Cronbach’s alpha. Those coefficients represent satisfactory reliability and validity.

Table 6. Components of Innovation Types.

	Components			
	Process Innovation	Product Innovation	Marketing Innovation	Human Resources Innovation
PRO7 Programming and control are planned carefully and in detailed processes	.973			
PRO8 Creativity is integrated into different processes in a mandatory way (quality, design, in the deployment of the action plan, during the development of strategy	.964			
PRO6 There is a good match between the nature of R&D skills and the process requirements of innovation	.925			
PI2, Prototype development, and testing are favored by the introduction of continuous improvement and innovation		.842		
PI3 There is a good match between production skills and the requirements of products innovation		.806		
PI6 Clients’ needs and wants are regularly consulted and used to introduce innovative products into the market		.748		
PI5 The organization dedicates a budget for research and development to innovate current products		.706		
PI1 There is an effective match between target market needs and innovative products		.546		
MI5 The organization adopts market research skills to leverage innovation in marketing			.744	
MI4 Sales and marketing skills are ideal for innovative project			.717	

MI3 There was a significant match between the organization’s marketing skills and the innovation needs			.665	
MI2 There are organized practices for external benchmarking of the competition (benchmarking)			.624	
MI1 The management team meets regularly to review and innovate marketing activities.			.624	
HRI3 Management offers employees the to organize their work flexibly (remote work, flextime)				.845
HRI5 There is an established process for the annual review of objectives and performance				.821
HRI4 Key performance indicators (KPIs) are defined and measured periodically in a dashboard				.700

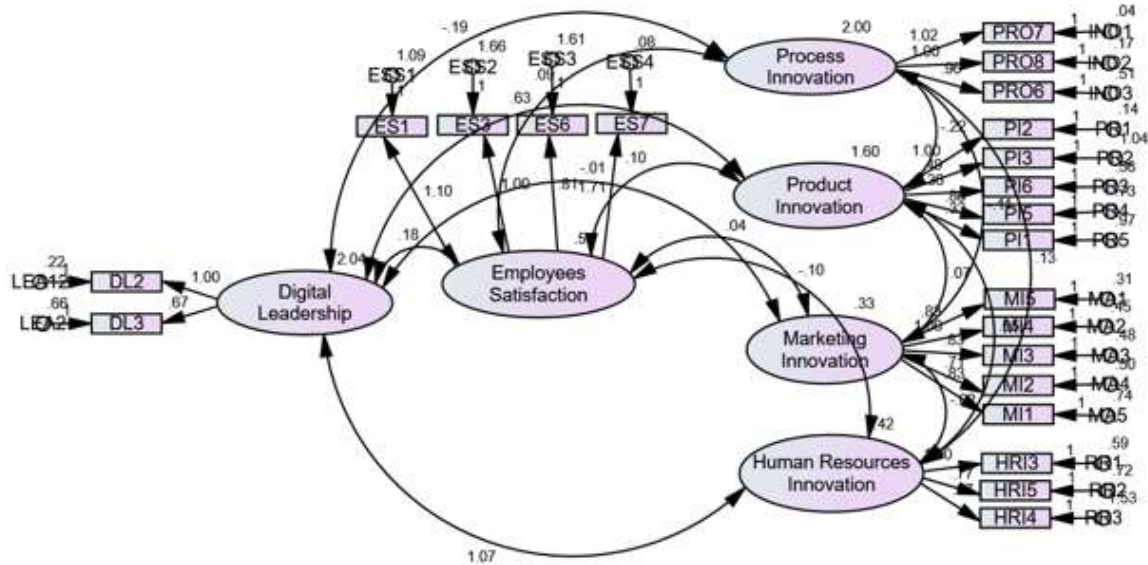


Fig. (2). Path Analysis (Second Order Model).

After rotation, three questions were related to processing innovation, and five items formed the product innovation. Those items are the subject of confirmation by a second-factor analysis (CFA). Five things were also verified to be the items constructing the marketing innovation, and three questions composed the scale of human resources innovation. Those items provided high confidence for accurate analysis.

Table 7. Regression Weights.

			Estimate	S.E.	C.R.	P
DL2	<---	Digital Leadership	1.000			
DL3	<---	Digital Leadership	.670	.053	12.590	***
ES1	<---	Employees Satisfaction	1.102	.152	7.265	***
ES3	<---	Employees Satisfaction	1.000			
ES6	<---	Employees Satisfaction	.809	.141	5.733	***

			Estimate	S.E.	C.R.	P
ES7	<---	Employees Satisfaction	1.709	.241	7.089	***
PRO7	<---	Process Innovation	1.025	.022	46.530	***
PRO8	<---	Process Innovation	1.000			
PRO6	<---	Process Innovation	.958	.034	27.799	***
PI2	<---	Product Innovation	1.000			
PI3	<---	Product Innovation	.487	.054	9.029	***
PI6	<---	Product Innovation	.357	.040	8.984	***
PI5	<---	Product Innovation	.864	.058	14.885	***
PI1	<---	Product Innovation	.330	.050	6.607	***
MI5	<---	Marketing Innovation	.834	.112	7.463	***
MI4	<---	Marketing Innovation	1.000			

			Estimate	S.E.	C.R.	P
MI3	<---	Marketing Innovation	.828	.120	6.925	***
MI2	<---	Marketing Innovation	.714	.112	6.347	***
MI1	<---	Marketing Innovation	.831	.134	6.193	***
HRI3	<---	Human Resources Innovation	1.000			
HRI5	<---	Human Resources Innovation	.771	.069	11.135	***
HRI4	<---	Human Resources Innovation	.669	.079	8.438	***

Table (6) verified indicators assessing digital leadership, employee satisfaction, process, product, marketing, and human resources innovation. At this stage, the estimated parameters are 22 for an N = 283. Factorial weights are more significant than 0.5 for the model, including the reduced indicators. Consequently, the required threshold has been reached.

Table 8. Assessment of Normality.

Variable	min	max	skew	c.r.	kurtosis	c.r.
HRI4	1.000	5.000	-.888	-6.100	-.717	-2.461
HRI5	1.000	5.000	-1.481	-10.169	1.139	3.913
HRI3	1.000	5.000	-.917	-6.299	-.727	-2.498
MI1	1.000	5.000	-.801	-5.502	-.067	-2.231
MI2	1.000	5.000	-.743	-5.101	.201	2.690
MI3	2.000	5.000	-.710	-4.874	-.097	-2.333
MI4	2.000	5.000	-.537	-3.688	-.708	-2.432
MI5	2.000	5.000	-.811	-5.573	.335	1.150
PI1	2.000	5.000	-1.155	-7.932	-.005	-2.019
PI5	1.000	5.000	-.959	-6.585	-.419	-1.438
PI6	2.000	5.000	-1.403	-9.634	1.455	4.995
PI3	1.000	5.000	-1.289	-8.849	.719	2.470
PI2	1.000	5.000	-.727	-4.996	-.814	-2.794
PRO6	1.000	5.000	-.943	-6.477	-.747	-2.564
PRO8	1.000	5.000	-.678	-4.657	-.981	-3.369
PRO7	1.000	5.000	-.677	-4.647	-.968	-3.323
ES7	1.000	5.000	-.646	-4.437	-.725	-2.489
ES6	1.000	5.000	.167	1.149	-1.355	-4.652

Variable	min	max	skew	c.r.	kurtosis	c.r.
ES3	1.000	5.000	.072	2.494	-1.539	-5.284
ES1	1.000	5.000	-.588	-4.038	-.899	-3.086
DL3	1.000	5.000	-.866	-5.950	-.328	-1.127
DL2	1.000	5.000	-.878	-6.029	-.802	-2.755

Skewness and Kurtosis indices are 1.5 and -1.1, respectively. Indeed, the Skewness for constructs and kurtosis have a C.R. higher than 1.96, indicating the normal distribution.

CFA with SEM verified the goodness of fit model measuring digital leadership, employees' satisfaction, and innovation factors (process, product, marketing, human resources innovation). In other words, they assessed the anticipated differences between the measured constructs. Indeed, they are represented in the data. The measurement model is compared to an alternative model.

4.3. Hypothesis Examination

The model best fits the data determined based on the Chi-square test. GFI, TLI, CFI, and RMSEA indices measure the verification of the fit.

Table 9. Global Model Fitness

X ²	P-Close	RMSEA	CFI	TLI	GFI
2.8	0.000	0.000	0.951	0.985	0.914

The (GFI) index a critical measure is calculated to evaluate the fitness degree between the hypothetical model and the observed covariance matrix. The GFI yielded a value greater than 0.9, indicating a good model fit. The (CFI) examined the deviation between results and the hypothetical model. CFI yielded values higher than 0.9. This value has proven to be an excellent indicator sustaining the model fitness. The RMSEA value of 0.06 or less showed a good model fit. Finally, the model fitness is authenticated by the value of p-close of less than 0.01. to summarize, The GFI, CFI, and TLI indices are more significant than 0.9 and close to 1. In addition, the RMSEA is less than 0.1 and converges towards 0.

The structural model adjustment confirmed that the variables' linear relations are statistically significant. The value of C.R. echoes the discrepancy percentage in the response variable explicated by its relationship to the predictor variables. Convergent validity was checked if the associated values with each factorial contribution were significant (> 1.96). Discounts range from 2.3 to 4.9.

Schematically, this model positions employee satisfaction as a mediating variable explaining the relationship between digital leadership and the four classifications of innovation. Employee satisfaction significantly influences the process, product, marketing, and human resources innovation (good C.R. varying between 2.4 and 4.9 associated with a significant p-value of 0.000). Besides, digital leadership influence employee satisfaction positively and significantly (CR=2.3, P=0.00 <0.01). The analysis of the results showed that test values (C.R.> 1.96) between hypotheses variables are signifi-

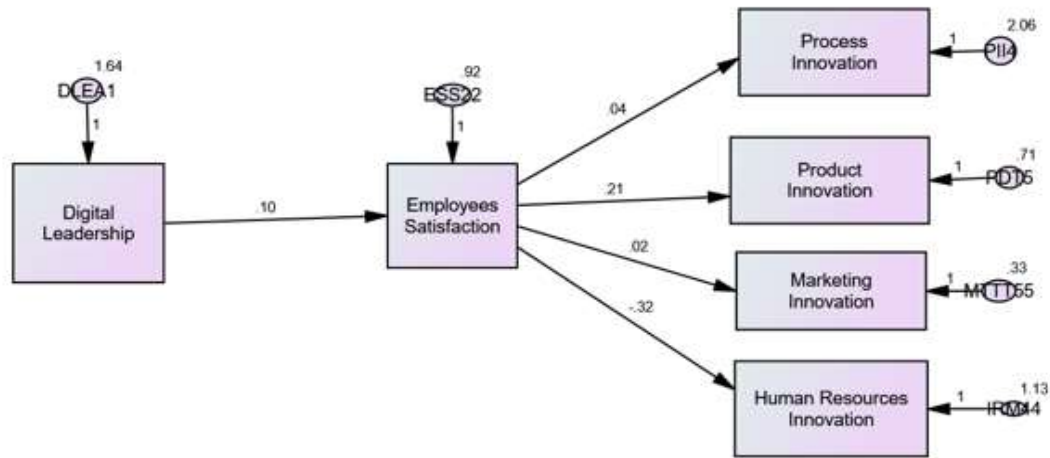


Fig. (3). Structural Equation Model (First Order Model).

Table 10. Regression Weights.

			Estimate	S.E.	C.R.	P
Employee satisfaction	<---	Digital leadership	.404	.045	2.319	***
Process Innovation	<---	Employee satisfaction	.238	.088	2.431	***
Product Innovation	<---	Employee satisfaction	.214	.052	4.134	***
Marketing Innovation	<---	Employee satisfaction	.417	.035	4.485	***
Human Resources Innovation	<---	Employee satisfaction	.323	.065	4.957	***

ificant for the six explanatory model variables. Consequently, the hypotheses are confirmed.

H1: Digital Leadership and Employees' Satisfaction	H1.a: Digital leadership has a significant influence on employee satisfaction.
H2: Employees' Satisfaction and Product Innovation	H2.a: employee satisfaction has a significant influence on product innovation.
H3: Employees' Satisfaction and Human Resources Innovation	H3.a: employee satisfaction has a significant influence on human resources innovation.
H4: Employees' Satisfaction and Process Innovation	H4.a: employee satisfaction has a significant influence on process innovation.
H5: Employees' Satisfaction and Marketing Innovation	H5.a: Employee satisfaction has a significant influence on marketing innovation.
H6: Employees' Satisfaction (Mediating Role)	H6.a: employee satisfaction has a significant mediating role between digital leadership and factors of innovation.
H7: Digital Leadership and Factors of Innovation	H7.a: digital leadership has a significant influence on factors of innovation.

To conclude, the use of the structural equation method has attained the expected maturity. The SEM verified empirical results (Park and Rahmani, 2021), (Demircioglu, 2021); (Drosos et al., 2021); (Loyola, 2019). This study generated

precise and relevant results. Indeed, digital leadership influence employee satisfaction and the four dimensions of innovation. When backed up by digital leadership, employee satisfaction results in positive creation. Therefore, the empirical outcome discussion generally propose a rich and in-depth debate, intending to suggest a set of theoretical and operational recommendations.

Employee satisfaction, directly and indirectly, influences innovation, performance, and product/service quality. Indeed, satisfied employees are apt for innovation and the ability to deliver better service. Investing in human resource management practices influences employee satisfaction positively and motivates them to innovate. Therefore, a relationship between employee satisfaction and innovation is predicted. Satisfaction is an imperative factor that must be considered when establishing a continuous innovation approach. Well-being and satisfaction are motivational factors. Great interest is taken in leadership styles that continue to evolve. Therefore, it assumed that satisfied employees would be more motivated and efficient in implementing innovation.

Employees and leaders must work together to achieve innovative goals. Teamwork is an essential component of success. Inefficiencies in operations are evident when satisfaction drops. Teamwork adds value to creating a cohesive team capable of accomplishing innovative tasks. When teams work together, they can generate new ideas, adopt the correct answers and reject errors. Satisfied teams lead to a more effi-

cient process and speed up the process, allowing the business to accelerate its growth and overcome challenges. Effective teamwork enables each team member to speak, compare ideas, and find inspiration. Satisfaction leads to innovation.

In a competitive market, innovation does not happen by chance. Organizations have documented the implementation of satisfaction strategies to innovate. Satisfied teams can develop new ideas and innovate. Faced with the talent shortage, innovation in management is a powerful argument for attracting and retaining the best employees. When managerial innovation aims to provide more comfort at work and contributes to the well-being of employees, their productivity improves, and their commitment is strengthened for the company's benefit. The health crisis has been an example of innovation with the development of telework and collaborative work using digital leadership.

5. CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

Organizations must evolve with the changing environment to stay competitive in today's market. Findings confirmed that digital leadership influenced employees' satisfaction positively. The latter also influenced innovation. Job satisfaction is a significant mediator. Satisfaction mediates the relationship between digital leadership and four innovation categories. Satisfied employees are encouraged to participate with innovative ideas. Employee satisfaction intensifies the relationship between digital leadership and innovation in the organization. This relationship of satisfaction allows autonomy to flourish and the information and knowledge necessary for creating innovative ideas to spread.

The theoretical and empirical arguments underlined the significance of digital leadership and job satisfaction in promoting innovation. Hence, managers should be encouraged to believe in satisfaction as an opportunity. Managers need to think in digital leadership, granting autonomy at work to satisfy and motivate employees to participate with innovative and creative ideas. Managers should also trust the innovation of their subordinates. It is an important factor influencing their willingness to engage in intrapreneurial behavior.

This study verified that innovation is a multi-dimensional variable composed of Process Innovation, Product Innovation, Marketing Innovation, and Human Resources Innovation. On the theoretical level, previous studies focusing on the antecedents of innovation focused on this variable as one dimension variable. Prior studies concentrated on organizational and environmental factors. Rare are those that focus on the role of digital leadership and employee satisfaction in facilitating innovation. This paper contributed to filling part of the insufficiency in knowledge.

This study highlighted managerial implications. Managerial implications are to be taken into consideration for its operation. To ensure innovation, the organizational environment should increase executive awareness to enhance satisfaction and digital leadership. They should adopt their organizational structure to remain competitive and innovative. Leadership should be shared between team members, promoting collective innovation and intelligence. This research exam-

ines the influence of digital leadership employees' satisfaction on organizational innovation. Managers must accept this managerial change and understand its benefits. Indeed, organizations must set up a favorable work environment to motivate employees' participation in digital leadership. The latter encourages initiative-taking and knowledge-sharing. Innovation resulting from digital leadership and satisfaction requires setting a mutual goal, social support, and good communication. Second, digital leadership is essential to team operations and cohesion. It empowers employees' professional and personal development and promotes innovation.

Interviews should analyze in depth the variables driving organizational innovation and its dimensions. Although results could be extracted from the survey, limitations should be considered to remain as objective and critical as possible. First, concerning the sample, the number of chosen participants is satisfactory but still limited and not representative of the Lebanese banking sector. Indeed, collecting a more significant sample was difficult due to economic changes in the Lebanese banking sector. Time constraints reduced the chance to survey different banks. Consequently, the survey could be extended by a future qualitative study.

Several avenues of research can be identified. These unlocked avenues deserve to be pursued. In particular, clarifying the link between factors such as task complexity, the efficiency of its execution, and organizational innovation is another avenue of research that needs to be pursued and refined.

Innovation represents a massive organizational challenge. To remain competitive, stand out, and create value. Innovation is an effective lever. Innovation strategies aligned with corporate policies reap the rewards. However, how can organizations secure innovation paybacks without the proper information technology, infrastructure, and equipment? Future research should research the influence of these factors. How to develop innovative products if no internal process exists to support these projects? It would be interesting to continue this research on companies with larger and smaller teams to analyze whether the size of the teams and the organization could significantly influence digital leadership. In addition, it would be interesting to do more in-depth research on the incubation time of innovation and digital leadership in companies. The goal is to direct organizations to implement new organizational culture and structure strategies.

REFERENCES

- Abilash, K. M. and Mary Siju, N. (2021) 'Telecommuting: An Empirical Study on Job Performance, Job Satisfaction and Employees Commitment during Pandemic Circumstances', *Shanlax International Journal of Management*. doi: 10.34293/management.v8i3.3547.
- Ahern, S. and Loh, E. (2021) 'Leadership during the COVID-19 pandemic: Building and sustaining trust in times of uncertainty', *BMJ Leader*. doi: 10.1136/leader-2020-000271.
- Al-Fakeh, F. A. et al. (2020) 'The moderating effects of organizational commitment on the relationship between employee satisfaction and employee performance in Jordanian Islamic banks', *Management Science Letters*. doi: 10.5267/j.msl.2020.6.002.
- AlAjmi, M. K. (2022) 'The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait',

- International Journal of Educational Research*. doi: 10.1016/j.ijer.2022.101928.
- Almohtaseb, A. A. *et al.* (2021) 'The effect of transformation leadership on government employee job satisfaction during Covid-19', *Management Science Letters*. doi: 10.5267/j.msl.2020.11.015.
- Alsolamy, M. (2021) 'Transformational Leadership and Employee Satisfaction', *International Journal of Customer Relationship Marketing and Management*. doi: 10.4018/ijcrmm.2021040103.
- Antonopoulou, H. *et al.* (2021a) 'Associations between traditional and digital leadership in academic environment: During the COVID-19 pandemic', *Emerging Science Journal*. doi: 10.28991/esj-2021-01286.
- Antonopoulou, H. *et al.* (2021b) 'Transformational leadership and digital skills in higher education institutes: During the covid-19 pandemic', *Emerging Science Journal*. doi: 10.28991/esj-2021-01252.
- Ben Arfi, W. and Hikkerova, L. (2021) 'Corporate entrepreneurship, product innovation, and knowledge conversion: the role of digital platforms', *Small Business Economics*. doi: 10.1007/s11187-019-00262-6.
- Aristana, I. N., Arsawan, I. W. E. and Rustiarini, N. W. (2022) 'Employee loyalty during slowdown of Covid-19: Do satisfaction and trust matter?', *International Journal of Tourism Cities*. doi: 10.1108/IJTC-03-2021-0036.
- Arnett, J. (2021) 'The relationship between transformational leadership styles and employee satisfaction for manufacturing management in Northeast Ohio: A quantitative correlational study', *Dissertation Abstracts International Section A: Humanities and Social Sciences*.
- Atikah, S. and Esti Riwayati, H. (2021) 'Strategies to improve employee performance during the covid-19 pandemic through motivation and leadership style mediated by job satisfaction', *Dinasti International Journal of Management Science*. doi: 10.31933/dijms.v2i5.866.
- Bag, S. *et al.* (2021) 'Roles of Innovation Leadership on Using Big Data Analytics to Establish Resilient Healthcare Supply Chains to Combat the COVID-19 Pandemic: A Multimethodological Study', *IEEE Transactions on Engineering Management*. doi: 10.1109/TEM.2021.3101590.
- Bahr, K. J. (2019) 'An exploratory study of types of innovation in us foundations', *Administrative Sciences*. doi: 10.3390/admsci9040093.
- Barakat, S. R. *et al.* (2016) 'The influence of corporate social responsibility on employee satisfaction', *Management Decision*. doi: 10.1108/MD-05-2016-0308.
- Barasa, B. L. and Kariuki, A. (2020) 'Transformation leadership style and employee job satisfaction in county government of Kakamega, Kenya', *International Journal of Research in Business and Social Science* (2147- 4478). doi: 10.20525/ijrbs.v9i5.821.
- Bartsch, S. *et al.* (2021) 'Leadership matters in crisis-induced digital transformation: how to lead service employees effectively during the COVID-19 pandemic', *Journal of Service Management*. doi: 10.1108/JOSM-05-2020-0160.
- Becker, M., Cardazzi, A. and McGurk, Z. (2022) 'Employee satisfaction and stock returns during the COVID-19 Pandemic', *Journal of Behavioral and Experimental Finance*. doi: 10.1016/j.jbef.2021.100603.
- Benitez, J. *et al.* (2022) 'Impact of digital leadership capability on innovation performance: The role of platform digitization capability', *Information and Management*. doi: 10.1016/j.im.2022.103590.
- Bennett, E. E. and McWhorter, R. R. (2021) 'Virtual HRD's Role in Crisis and the Post Covid-19 Professional Lifeworld: Accelerating Skills for Digital Transformation', *Advances in Developing Human Resources*. doi: 10.1177/1523422320973288.
- Boone, E. (2021) 'Job satisfaction and retention among direct care workers in times of COVID-19.', *Dissertation Abstracts International Section A: Humanities and Social Sciences*.
- Boukaidi, M. *et al.* (2020) 'COVID-19 and Cloud Computing, the Leadership Paradoxes of Decision Making Acceleration and Data Regulation', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3687769.
- Calen, C. *et al.* (2021) 'The role of transformational leadership, leader member exchange, digital transformation on organizational citizenship behaviour and work innovation capabilities in during Covid-19 pandemic', *JPII (Jurnal Penelitian Pendidikan Indonesia)*. doi: 10.29210/020211163.
- Caperna, G. *et al.* (2020) 'Googling Unemployment During the Pandemic: Inference and Nowcast Using Search Data', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3627754.
- Caperna, G. *et al.* (2022) 'A babel of web-searches: Googling unemployment during the pandemic', *Labour Economics*. doi: 10.1016/j.labeco.2021.102097.
- Caramanica, L. and O'Rourke, P. (2021) 'Boundary spanning leadership in response to the covid-19 pandemic: Experience of nurse leaders in a large integrated long-term health care system', *Nursing Administration Quarterly*. doi: 10.1097/NAQ.0000000000000488.
- Carey, P. *et al.* (2021) 'Applying for and receiving unemployment insurance benefits during the coronavirus pandemic', *Monthly Labor Review*. doi: 10.21916/mlr.2021.19.
- Caringal-Go, J. F. *et al.* (2021) 'Crisis leadership from the perspective of employees during the COVID-19 pandemic', *Leadership and Organization Development Journal*. doi: 10.1108/LODJ-07-2020-0284.
- Chandra Putra, K. *et al.* (2020) 'The Impact of Flexible Working Hours, Remote Working, and Work Life Balance to Employee Satisfaction in Banking Industry during Covid-19 Pandemic Period', *Journal of Business Management Review*. doi: 10.47153/jbmr15.592020.
- Chanmugam, A. (2021) 'The menu of bad options: Academic leadership during the early pandemic', *Qualitative Social Work*. doi: 10.1177/1473325020981081.
- Chen, C., Ding, X. and Li, J. (2022) 'Transformational leadership and employee job satisfaction: The mediating role of employee relations climate and the moderating role of subordinate gender', *International Journal of Environmental Research and Public Health*. doi: 10.3390/ijerph19010233.
- Chen, J., Leung, W. S. and Evans, K. P. (2016) 'Are employee-friendly workplaces conducive to innovation?', *Journal of Corporate Finance*. doi: 10.1016/j.jcorpfin.2016.07.011.
- Chirumalla, K. (2021) 'Building digitally-enabled process innovation in the process industries: A dynamic capabilities approach', *Technovation*. doi: 10.1016/j.technovation.2021.102256.
- Chong, J. and Duan, S. X. (2022) 'Riding on the waves of the COVID-19 pandemic in re-thinking organizational design: a contingency-based approach', *Journal of Strategy and Management*. doi: 10.1108/JSMA-07-2021-0142.
- De Clercq, D. and Pereira, R. (2021) 'Taking the Pandemic by Its Horns: Using Work-Related Task Conflict to Transform Perceived Pandemic Threats Into Creativity', *Journal of Applied Behavioral Science*. doi: 10.1177/0021886320979649.
- Corrales-Estrada, M. (2019) 'Types of innovation', in *Innovation and Entrepreneurship: A New Mindset for Emerging Markets*. doi: 10.1108/978-1-78973-701-120191009.
- Coun, M. J. H. *et al.* (2021) 'Leading Innovative Work-Behavior in Times of COVID-19: Relationship Between Leadership Style, Innovative Work-Behavior, Work-Related Flow, and IT-Enabled Presence Awareness During the First and Second Wave of the COVID-19 Pandemic', *Frontiers in Psychology*. doi: 10.3389/fpsyg.2021.717345.
- Čuček, M. and Kač, S. M. (2020) 'Organizational culture in logistics sector and its relation to employee satisfaction', *Management (Croatia)*. doi: 10.30924/mjcmi.25.2.9.
- Cuevas-Vargas, H. *et al.* (2021) 'The relation between adoption of information and communication technologies and marketing innovation as a key strategy to improve business performance', *Journal of Competitiveness*. doi: 10.7441/JOC.2021.02.02.
- Damanpour, F., Sanchez-Henriquez, F. and Chiu, H. H. (2018) 'Internal and External Sources and the Adoption of Innovations in Organizations', *British Journal of Management*. doi: 10.1111/1467-8551.12296.
- Damayanti, F. P. and Mirfani, A. M. (2021) 'An Analysis of Digital Leadership in the Pandemic Covid-19 Era', in *Proceedings of the 4th International Conference on Research of Educational Administration and Management (ICREAM 2020)*. doi: 10.2991/assehr.k.210212.033.
- Daraba, D. *et al.* (2021) 'Working from home during the corona pandemic: Investigating the role of authentic leadership, psychological capital, and gender on employee performance', *Cogent Business and Management*. doi: 10.1080/23311975.2021.1885573.
- Debby Reiza Macella, A. (2020) 'Regional Innovation: Regional Leadership in Empowering the Aceh Community during the Covid-19

- Pandemic', *Iapa Proceedings Conference*. doi: 10.30589/proceedings.2020.421.
- Demircioglu, M. A. (2021) 'The Effects of Innovation Climate on Employee Job Satisfaction and Affective Commitment: Findings from Public Organizations', *Review of Public Personnel Administration*. doi: 10.1177/0734371X211043559.
- Dewi, R. K. and Sjabadhini, B. (2021) 'Digital Leadership as a Resource to Enhance Managers' Psychological Well-Being in COVID-19 Pandemic Situation in Indonesia', *The South East Asian Journal of Management*. doi: 10.21002/seam.v15i2.12915.
- Ding, A. W. and Li, S. (2021) 'National response strategies and marketing innovations during the COVID-19 pandemic', *Business Horizons*. doi: 10.1016/j.bushor.2020.12.005.
- Dirani, K. M. et al. (2020) 'Leadership competencies and the essential role of human resource development in times of crisis: a response to Covid-19 pandemic', *Human Resource Development International*. doi: 10.1080/13678868.2020.1780078.
- Drosos, D. et al. (2021) 'Managing Change And Managerial Innovation Towards Employees Satisfaction At Workplace', *TEM Journal*. doi: 10.18421/TEM102-15.
- Dwiedienawati, D. et al. (2020) 'Transformational leadership, communication quality influences to perceived organization effectiveness and employee engagement and employee retention during the covid-19 pandemic', *Journal of Advanced Research in Dynamical and Control Systems*. doi: 10.5373/JARDCS/V12SP7/20202169.
- Dwiedienawati, D. et al. (2021) 'Determinants of perceived effectiveness in crisis management and company reputation during the COVID-19 pandemic', *Cogent Business and Management*. doi: 10.1080/23311975.2021.1912523.
- Dwyer, M. et al. (2021) 'Burnout and Compassion Satisfaction: Survey Findings of Healthcare Employee Wellness During COVID-19 Pandemic using ProQOL', *Kansas Journal of Medicine*. doi: 10.17161/kjm.vol1415171.
- Eichenauer, C. J., Ryan, A. M. and Alanis, J. M. (2022) 'Leadership During Crisis: An Examination of Supervisory Leadership Behavior and Gender During COVID-19', *Journal of Leadership and Organizational Studies*. doi: 10.1177/15480518211010761.
- Elias, A. A. (2021) 'Kerala's Innovations and Flexibility for Covid-19 Recovery: Storytelling using Systems Thinking', *Global Journal of Flexible Systems Management*. doi: 10.1007/s40171-021-00268-8.
- Elrehail, H. et al. (2020) 'Employee satisfaction, human resource management practices and competitive advantage: The case of Northern Cyprus', *European Journal of Management and Business Economics*. doi: 10.1108/EJMBE-01-2019-0001.
- Entress, R. M. et al. (2020) 'The need for innovation in deathcare leadership', *International Journal of Public Leadership*. doi: 10.1108/ijpl-07-2020-0068.
- Fadillah, R. et al. (2020) 'the influence of leadership style on innovation capabilities of islamic school teachers in organizational learning perspective during covid-19 pandemic', *Systematic Reviews in Pharmacy*. doi: 10.31838/srp.2020.7.83.
- Farrell, R. (2021) 'Covid-19 as a catalyst for sustainable change: the rise of democratic pedagogical partnership in initial teacher education in Ireland', *Irish Educational Studies*. doi: 10.1080/03323315.2021.1910976.
- Fatemi, S. Z. et al. (2022) 'Do different genders' knowledge sharing behaviors drive different innovative behavior? The moderating effect of social capital', *European Journal of Innovation Management*. doi: 10.1108/EJIM-07-2020-0305.
- Fatima, T. et al. (2021) 'Impact Of Digital Leadership On Open Innovation: A Moderating Serial Mediation Model', *Academy of Management Proceedings*. doi: 10.5465/ambpp.2021.13398abstract.
- Francis, B. et al. (2021) 'The impact of organization capital on firm innovation', *Journal of Financial Stability*. doi: 10.1016/j.jfs.2020.100829.
- Galanakis, C. M. et al. (2021) 'Innovations and technology disruptions in the food sector within the COVID-19 pandemic and post-lockdown era', *Trends in Food Science and Technology*. doi: 10.1016/j.tifs.2021.02.002.
- Gerada, C. (2021) 'Reflections on leadership during the Covid pandemic', *Postgraduate Medicine*. doi: 10.1080/00325481.2021.1903218.
- De Giovanni, P. and Cariola, A. (2021) 'Process innovation through industry 4.0 technologies, lean practices and green supply chains', *Research in Transportation Economics*. doi: 10.1016/j.retrec.2020.100869.
- Gonçalves, S. P. et al. (2021) 'COVID-19 and people management: The view of human resource managers', *Administrative Sciences*. doi: 10.3390/admsci11030069.
- Gorgenyi-Hegyessy, E., Nathan, R. J. and Fekete-Farkas, M. (2021) 'Workplace health promotion, employee wellbeing and loyalty during covid-19 pandemic-large scale empirical evidence from Hungary', *Economies*. doi: 10.3390/economies9020055.
- Gouda, H. (2020) 'The impact of the sense of security in young employees on job satisfaction during COVID-19 pandemic', *International Journal of ADVANCED AND APPLIED SCIENCES*. doi: 10.21833/ijaas.2020.11.005.
- Hafiza Hamzah, N., Khalid, M. and Wahab, J. A. (2021) 'The effects of principals' digital leadership on teachers' digital teaching during the covid-19 pandemic in malaysia', *Journal of Education and e-Learning Research*. doi: 10.20448/journal.509.2021.82.216.221.
- Hage, R. et al. (2021) 'Agile Approach for E-Learning in Digital-Leadership Training for Small and Medium Enterprises', *EDEN Conference Proceedings*. doi: 10.38069/edenconf-2021-ac0002.
- Han, C. and Zhang, S. (2021) 'Multiple strategic orientations and strategic flexibility in product innovation', *European Research on Management and Business Economics*. doi: 10.1016/j.iedeen.2020.100136.
- Han, H. et al. (2020) 'Utilizing green design as workplace innovation to relieve service employee stress in the luxury hotel sector', *International Journal of Environmental Research and Public Health*. doi: 10.3390/ijerph17124527.
- Hapha, Y. and Somprach, K. (2019) 'A study of digital leadership and creative leadership that affect innovation in Thai higher education', *Journal of Critical Reviews*. doi: 10.22159/jcr.06.04.07.
- Hashim, R. et al. (2020) 'Employees' Job Satisfaction and Performance through working from Home during the Pandemic Lockdown', *Environment-Behaviour Proceedings Journal*. doi: 10.21834/ebpj.v5i15.2515.
- Houlihan, N. (2020) 'Nursing Innovation, Leadership, and Dedication Shine During Pandemic.', *ONS Voice*.
- Hrnjic, A. and Djideliija, I. (2018) 'The Impact of Employee Satisfaction on Innovation Capacity in Telecommunications', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3281204.
- Islam, A., Zawawi, N. F. M. and Wahab, S. A. (2021) 'Rethinking survival, renewal, and growth strategies of SMEs in Bangladesh: the role of spiritual leadership in crisis situation', *PSU Research Review*. doi: 10.1108/prr-02-2021-0010.
- Jackson, P. and Ortego-Marti, V. (2022) 'Skill Loss During Unemployment and the Scarring Effects of the Covid-19 Pandemic', *SSRN Electronic Journal*. doi: 10.2139/ssrn.4063635.
- Jayant, S. and Suji Raga Priya, M. R. (2021) 'Challenges of Women in Leadership Roles During Pandemic', *Shanlax International Journal of Management*. doi: 10.34293/management.v8is1-feb.3755.
- Jayaraman, R. and Mishra, S. K. (2022) 'Work and non-work life of R&D professionals during Covid-19: a cultural perspective', *Management Decision*. doi: 10.1108/MD-11-2020-1575.
- Jing, C. et al. (2019) 'Financial constraints and employee satisfaction', *Economics Letters*. doi: 10.1016/j.econlet.2019.108599.
- Karakose, T., Polat, H. and Papadakis, S. (2021) 'Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the covid-19 pandemic', *Sustainability (Switzerland)*. doi: 10.3390/su132313448.
- Khan, N. A. et al. (2020) 'A trail of chaos: How psychopathic leadership influence employee satisfaction and turnover intention via self-efficacy in tourism enterprises', *Journal of Leisure Research*. doi: 10.1080/00222216.2020.1785359.
- Kızıloğlu, M. (2022) 'The Effect of Transformational Leadership on Organizational Learning and Innovation During Covid-19', *Journal of Business Research - Turk*. doi: 10.20491/isarder.2022.1388.
- Ko, Y. J. and Choi, J. N. (2019) 'Overtime work as the antecedent of employee satisfaction, firm productivity, and innovation', *Journal of Organizational Behavior*. doi: 10.1002/job.2328.
- Kozicki, B. and Gornikiewicz, M. (2020) 'Unemployment Rate in Poland and USA during COVID-19 Pandemic: A Case Study', *EUROPEAN RESEARCH STUDIES JOURNAL*. doi: 10.35808/ersj/1861.

- Kristinae, V. et al. (2020) 'The role of powerful business strategy on value innovation capabilities to improve marketing performance during the covid-19 pandemic', *Uncertain Supply Chain Management*. doi: 10.5267/j.uscm.2020.8.005.
- Lasisi, T. T. et al. (2020) 'Explicating innovation-based human resource management's influence on employee satisfaction and performance', *Employee Relations*. doi: 10.1108/ER-08-2019-0319.
- Laufer, M. et al. (2021) 'Digital higher education: a divider or bridge builder? Leadership perspectives on edtech in a COVID-19 reality', *International Journal of Educational Technology in Higher Education*. doi: 10.1186/s41239-021-00287-6.
- Lehr, A. and Vaughan, S. (2021) 'Grief, Growth, and Silver Linings: Humanistic Leadership During the Covid-19 Pandemic', in *Springer Proceedings in Complexity*. doi: 10.1007/978-3-030-84311-3_54.
- Lengen, J. C. et al. (2021) 'Social isolation among teleworkers in the context of the COVID-19 pandemic: Indications for organising telework with respect to social needs', *Zentralblatt für Arbeitsmedizin, Arbeitsschutz und Ergonomie*. doi: 10.1007/s40664-020-00410-w.
- Libal, K. et al. (2021) 'Human Rights of Forced Migrants During the COVID-19 Pandemic: An Opportunity for Mobilization and Solidarity', *Journal of Human Rights and Social Work*. doi: 10.1007/s41134-021-00162-4.
- Loyola, L. A. (2019) 'Job Satisfaction and Employee Creativity and Innovation for Student Affairs Practitioners', *Academia.Edu*.
- Lyng, H. B. et al. (2021) 'Healthcare leaders' use of innovative solutions to ensure resilience in healthcare during the Covid-19 pandemic: a qualitative study in Norwegian nursing homes and home care services', *BMC Health Services Research*. doi: 10.1186/s12913-021-06923-1.
- Makgopa, S. S. (2021) 'Drivers of Service Innovation in Service Organisations', *Academic Journal of Interdisciplinary Studies*. doi: 10.36941/ajis-2021-0037.
- Mascolo, M. F. and Burbach, S. (2021) 'Responding to the Coronavirus: Reinventing Ourselves through Transformative Problem Solving', *Journal of Constructivist Psychology*. doi: 10.1080/10720537.2020.1835592.
- Mauro, T. G. and Borges-Andrade, J. E. (2020) 'Human resource system as innovation for organisations', *Innovation and Management Review*. doi: 10.1108/INMR-03-2019-0037.
- Mbogo, R. W. (2020) 'LEADERSHIP ROLES IN MANAGING EDUCATION IN CRISES: THE CASE OF KENYA DURING COVID-19 PANDEMIC', *European Journal of Education Studies*. doi: 10.46827/ejes.v7i9.3250.
- Mikhael, M. A. (2021) 'The impact of ethical leadership on employee job satisfaction', *Dissertation Abstracts International Section A: Humanities and Social Sciences*.
- MUNFAQIROH, S., MAULUDIN, H. and SUHENDAR, A. (2021) 'The Influence of Transformational Leadership on Employee Job Satisfaction with Organizational Commitment as Intervening Variable', *International Journal of Human Resource Studies*. doi: 10.5296/ijhrs.v11i1.18270.
- Muttaqin, G. F., Taqi, M. and Arifin, B. (2020) 'Job Performance During COVID-19 Pandemic: A Study on Indonesian Startup Companies*', *Journal of Asian Finance, Economics and Business*. doi: 10.13106/JAFEB.2020.VOL7.NO12.1027.
- Negoro, M. C. W. and Wibowo, A. (2021) 'Empathetic Leadership, Job Satisfaction And Intention To Leave Among Millennials In A Start-Up Industry: Needs' Satisfaction As A Mediating Variable', *Journal of Indonesian Economy and Business*. doi: 10.22146/jieb.v36i2.1398.
- Ngo, X. T., Le, H. A. and Doan, T. K. (2022) 'The impact of transformational leadership style and employee creativity on organizational innovation in universities during the covid-19 pandemic', *Humanities and Social Sciences Letters*. doi: 10.18488/73.v10i1.2234.
- Nieves, J. and Quintana, A. (2018) 'Human resource practices and innovation in the hotel industry: The mediating role of human capital', *Tourism and Hospitality Research*. doi: 10.1177/1467358415624137.
- Nugroho, I. et al. (2021) 'Higher education leadership and uncertainty during the COVID-19 pandemic', *Journal of Socioeconomics and Development*. doi: 10.31328/jсед.v4i1.2274.
- Oanh, N. T. (2019) 'The Relationship between Innovation Capability, Innovation Type and Innovation Performance in FDI Enterprises in Vietnam', *International Journal of Economics and Finance*. doi: 10.5539/ijef.v11n8p28.
- Okoe, A. F. et al. (2018) 'Examining human resource practice outcomes and service innovation', *Service Industries Journal*. doi: 10.1080/02642069.2017.1397636.
- Oliva, F. L. et al. (2019) 'Innovation in the main Brazilian business sectors: characteristics, types and comparison of innovation', *Journal of Knowledge Management*. doi: 10.1108/JKM-03-2018-0159.
- Ong, A. K. S. et al. (2021) 'Consumer behavior in clothing industry and its relationship with open innovation dynamics during the covid-19 pandemic', *Journal of Open Innovation: Technology, Market, and Complexity*. doi: 10.3390/joitmc7040211.
- P.Haan, S. M. (2021) 'Transformational Leadership and Employee Satisfaction', *International Journal of Customer Relationship Marketing and Management*.
- Paluszak, G. T. et al. (2021) 'The organisational resilience (OR) of rural non-profits (RNPOs) under conditions of the COVID-19 pandemic global uncertainty', *Agriculture*. doi: 10.3390/AGRICULTURE11050458.
- Park, H. and Rahmani, M. (2021) 'Employee Satisfaction and Firm Innovation Performance', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3860303.
- Park, K. M. (2021) 'Navigating the digital revolution and crisis times: humanitarian and innovation-inspired leadership through the pandemic', *Journal of Strategy and Management*. doi: 10.1108/JSMA-01-2021-0021.
- Permana, E. et al. (2021) 'Transformational leadership model construction service industry in Jakarta during the covid-19 pandemic era', *Academy of Entrepreneurship Journal*.
- Pradana, D. A. et al. (2021) 'Entrepreneurship development program: Branding and marketing innovation during the pandemic', *Community Empowerment*. doi: 10.31603/ce.5477.
- Pramono, S. E. et al. (2021) 'COVID-Driven Innovation in Higher Education: Analysing the Collaboration of Leadership and Digital Technology during the Pandemic in UiTM Malaysia and UNNES Indonesia', *Asian Journal of University Education*. doi: 10.24191/AJUE.V17I2.13393.
- Purba, M. I. et al. (2021) 'The effect of digital marketing and e-commerce on financial performance and business sustainability of MSMEs during COVID-19 pandemic in Indonesia', *International Journal of Data and Network Science*. doi: 10.5267/j.ijdns.2021.6.006.
- Purchase, S. and Volery, T. (2020) 'Marketing innovation: a systematic review', *Journal of Marketing Management*. doi: 10.1080/0267257X.2020.1774631.
- Qi, Y. et al. (2020) 'Manufacturing practices and servitization: The role of mass customization and product innovation capabilities', *International Journal of Production Economics*. doi: 10.1016/j.ijpe.2020.107747.
- Rahman, K. T. and Zahir Uddin Arif, M. (2021) 'Working from Home during the COVID-19 Pandemic: Satisfaction, Challenges, and Productivity of Employees', *International Journal of Trade and Commerce-IIARTC*. doi: 10.46333/ijtc/9/2/3.
- Rajan, R., Dhir, S. and Sushil (2021) 'Technology management for innovation in organizations: an argumentation-based modified TISM approach', *Benchmarking*. doi: 10.1108/BIJ-01-2020-0019.
- Rendo, A., Au-Yong-Oliveira, M. and Dias, A. (2021) 'Democratic Talent Management in an Industry 4.0 Environment of Digital Revolution', in *Advances in Intelligent Systems and Computing*. doi: 10.1007/978-3-030-72651-5_34.
- Rinaldi, E. and Riyanto, S. (2021) 'The effect of work motivation, work environment, and job satisfaction on organizational citizenship behavior and their impact on employees performance of RSU Menteng Mitra Afia during the Covid-19 pandemic', *International Journal of Research in Business and Social Science (2147- 4478)*. doi: 10.20525/ijrbs.v10i6.1293.
- Roman, N. A. (2021) 'Banking Services Marketing via Social Media Platforms and Its Impact on Consumer Behavior During COVID-19 Pandemic in Jordanian Banks: Mediating Role of Innovation

- Marketing', *International Journal of Financial Research*. doi: 10.5430/ijfr.v12n4p239.
- Ryan, Y. et al. (2021) 'Product Innovation and Utilization of Digital Marketing for Business Sustainability During a Pandemic in Culinary Business', *Business and Accounting Research (IJEBAAR) Peer Reviewed-International Journal*.
- Safuan, S. and Kurnia, T. (2021) 'Literature Review of Pandemic covid 19 Effects on Employee Compensation', *Journal of Business Management Review*. doi: 10.47153/jbmr21.852021.
- Sanusi et al. (2020) 'Develop leadership style model for Indonesian SMEs leaders during Covid-19 pandemic', *Systematic Reviews in Pharmacy*. doi: 10.31838/srp.2020.8.82.
- Satell, G. (2017) 'The 4 Types of Innovation and the Problems They Solve The 4 Types of Innovation and the Problems They', *Harvard Business Review Digital Articles*.
- Scheepers, C. B. and Bogie, J. (2020) 'Uber Sub-Saharan Africa: contextual leadership for sustainable business model innovation during COVID-19', *Emerald Emerging Markets Case Studies*. doi: 10.1108/EEMCS-05-2020-0165.
- Strenitzerová, M. and Achimský, K. (2019) 'Employee satisfaction and loyalty as a part of sustainable human resource management in postal sector', *Sustainability (Switzerland)*. doi: 10.3390/su11174591.
- Strielkowski, W. et al. (2022) 'Novel Insights in the Leadership in Business and Economics: A Post-Coronavirus Update', *Economies*. doi: 10.3390/economies10020048.
- Sugianto, L. O. and Hartono, S. (2017) 'Enhancing Capability of Human Resources Innovation', *Jurnal Dinamika Manajemen*. doi: 10.15294/jdm.v8i1.10415.
- Suomi, A., Schofield, T. P. and Butterworth, P. (2020) 'Unemployment, Employability and COVID19: How the Global Socioeconomic Shock Challenged Negative Perceptions Toward the Less Fortunate in the Australian Context', *Frontiers in Psychology*. doi: 10.3389/fpsyg.2020.594837.
- Supriadi, O. et al. (2020) 'Did transformational, transactional leadership style and organizational learning influence innovation capabilities of school teachers during covid-19 pandemic?', *Systematic Reviews in Pharmacy*. doi: 10.31838/srp.2020.9.47.
- Susilawati, D. M., Suryanto and Windijarto (2021) 'Transforming the digital leadership to improve public service performance in the COVID-19 outbreak', *Economic Annals-XXI*. doi: 10.21003/ea.V188-04.
- Tsai, C. F. and Yen, Y. F. (2020) 'Moderating effect of employee perception of responsible downsizing on job satisfaction and innovation commitment', *International Journal of Human Resource Management*. doi: 10.1080/09585192.2018.1424014.
- Uluğ, Ö. M., Solak, N. and Kanik, B. (2022) 'Shared humanity, awareness of socio-economic privilege, and classism during the pandemic as predictors of supporting equal socio-economic policies', *Current Psychology*. doi: 10.1007/s12144-021-01734-3.
- Vagnani, G., Gatti, C. and Proietti, L. (2019) 'A conceptual framework of the adoption of innovations in organizations: a meta-analytical review of the literature', *Journal of Management and Governance*. doi: 10.1007/s10997-019-09452-6.
- Vincenzi, T. B. De and da Cunha, J. C. (2021) 'Open innovation and performance in the service sector', *Innovation and Management Review*. doi: 10.1108/INMR-01-2020-0004.
- Wahab Ali, M. K. (2020) 'Mediating Educational Challenges Amidst Covid-19 Pandemic', *Asia Pacific Institute of Advanced Research (APJCECT)*.
- Wahyu Wasono Mihardjo, L. and Sasmoko, S. (2020) 'Digital Transformation: Digital Leadership Role in Developing Business Model Innovation Mediated by Co-Creation Strategy for Telecommunication Incumbent Firms', in *Strategy and Behaviors in the Digital Economy*. doi: 10.5772/intechopen.82517.
- Whelehan, D. F., Algeo, N. and Brown, D. A. (2021) 'Leadership through crisis: fighting the fatigue pandemic in healthcare during COVID-19', *BMJ Leader*. doi: 10.1136/leader-2020-000419.
- Wijaya Setiawan, A. et al. (2021) 'The Effect of Digital Communication and Agile Leadership on Employee Work Motivation in a Pharmaceutical Distribution Company in a Pandemic', in *ACM International Conference Proceeding Series*. doi: 10.1145/3510309.3510352.
- Wiji Prasetyo, B. and Imanda Firmantyas Putri Pertiwi (2021) 'The Influence of Product Innovation, Marketing Strategy, and Entrepreneurship Orientation on Sharia Hotel Marketing Performance in the Covid-19 Pandemic Period with Competitive Advantage as an Intervening Variable', *Journal of Business and Management Review*. doi: 10.47153/jbmr29.2122021.
- Wolter, J. S. et al. (2019) 'Employee satisfaction trajectories and their effect on customer satisfaction and repatronage intentions', *Journal of the Academy of Marketing Science*. doi: 10.1007/s11747-019-00655-9.
- Xanthopoulou, P. and Plimakis, S. (2021) 'Digitalization and Digital Transformation and Adoption in the Public Administration during the Covid19 Pandemic Crisis', *European Scientific Journal, ESJ*. doi: 10.19044/esj.2021.v17n31p60.
- Xie, X., Huo, J. and Zou, H. (2019) 'Green process innovation, green product innovation, and corporate financial performance: A content analysis method', *Journal of Business Research*. doi: 10.1016/j.jbusres.2019.01.010.
- Yokuş, G. (2022) 'Developing a guiding model of educational leadership in higher education during the covid-19 pandemic: A grounded theory study', *Participatory Educational Research*. doi: 10.17275/per.22.20.9.1.
- Yoon, H. R. and Na, D. S. (2018) 'A study on the effect of organizational culture types on consulting satisfaction-focused on the moderating effect of reliability and responsiveness, types of consulting service quality', *Indian Journal of Public Health Research and Development*. doi: 10.5958/0976-5506.2018.00771.4.
- Yu, J. and Wu, Y. (2021) 'The impact of enforced working from home on employee job satisfaction during COVID-19: An event system perspective', *International Journal of Environmental Research and Public Health*. doi: 10.3390/ijerph182413207.
- Zhang, Y. et al. (2019) 'The influence of management innovation and technological innovation on organization performance. a mediating role of sustainability', *Sustainability (Switzerland)*. doi: 10.3390/su11020495.