



## Examining the Effect of Digital Leadership on Competitive Advantage with the Mediating Role of Responsible Innovation and Moderation of Social Orientation (Case study: Digikala site)

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### **Abstract**

Today's world is accompanied by increasing changes that the rate and speed of these changes are incredible and affect people, organizations and societies in different ways. One of the most important changes is the emergence of information technology and the digital world, which brings many potential benefits. Therefore, the current research aims to investigate the effect of digital leadership on competitive advantage with the mediating role of responsible innovation and moderating social orientation (case study: Digi-Kala website). It has been done. This study in terms of method is descriptive-survey research and in terms of purpose is applied research. the statistical population is all managers, senior experts and specialists in the Digi Kala website, so the method of collecting information is library and field studies, and the tool for collecting information is a standard questionnaire, and a Likert scale is used. The current research was conducted by sampling and the sample size was determined using Cochran's formula, the number of statistical sample size was determined to be 169 people and sampling method was done by simple random sampling method. Data analysis was done using statistical tests and Smart PLS software. The research findings showed that all the research hypotheses were confirmed and the results showed that digital leadership has a significant effect on competitive advantage with the mediating role of responsible innovation and moderating role of social orientation.

**Keywords:** *Digital Leadership; Competitive Advantage; Responsible Innovation; Social Orientation*

### **Introduction**

Today, human resources are the main factor in the success of organizations. Therefore, other employees are not only considered as production, but have become an asset for the organization. Organizations must also be sensitive to the changes that occur in the internal and external environment to compete and maintain business during the significant competition caused by globalization and the industrial revolution. Leaders are examples of a good teacher, coach to all the people of the big family

that is the organization. The leadership style is characterized by promoting teamwork, consensus and participation. The values that people share are loyalty, commitment to the organization and mutual trust. Teamwork is very important (Turk, 2022). Digital leadership, broadly defined as an appropriate leadership approach in the age of digital disruption, is defined by a company's ability to support the cost-effective use of its assets at the corporate and individual level to achieve its digital business goals (Moffert and Swaminathan, 2018; Brewer and Zelat, 2019). Therefore, the concept of "Digital Leadership" (DL) has emerged as a central element in facilitating the digital transformation of companies and ensuring the long-term success of organizational reform initiatives in this digital age. Digital leaders identify and implement innovative product or service differentiation to drive digital business strategy evolution and align with external environmental demands. Therefore, according to what was said, the purpose of this research is to investigate the impact of digital leadership on competitive advantage with the mediating role of responsible innovation and moderation of social orientation.

### **Research Problem**

Technological advances in the 21st century have caused profound changes in the way people live, work and communicate, and this era has been called the 4.0 industrial revolution or the digital era. The wide influence of information and communication technologies has created an all-encompassing digital environment in contemporary society (Megsa, 2022). This current digital transformation is driven by the widespread availability of advanced technologies and encompasses automatic machines, robotics, artificial intelligence, Internet of Things, digital networking, and augmented reality. In response to this evolving landscape, businesses are forced to innovate to effectively respond to the diverse range of their customers (Flieverbom et al., 2019).

Digital leadership can increase efficiency, productivity and innovation in the workplace by adopting the right digital technologies. Digital leadership also contributes to the success of a business by facilitating change management, promoting digital transformation and making sound decisions. Research shows that digital leadership facilitates improved employee performance, the development of digital skills, and the achievement of business goals. In a changing digital age, digital leadership is not only the leader's responsibility, but a shared responsibility (Turiadi et al., 2023).

In this way, the goal of successful digital leaders is to increase the access and quality of digital services available to the public, to strengthen a more innovative and interactive culture in the organization and society. Among the goals of digital leaders, we can mention the effort to introduce advanced corporate strategies that lead to revenue growth, increased productivity, and creating added value. In addition, these leaders engage in responsible innovation, addressing collective needs, environmental concerns, legal and business imperatives, all while planning to achieve competitive advantage. This raises another interesting field called responsible innovation (New et al., 2022).

Responsible innovation (RI) is a stakeholder-driven approach that promotes innovation while considering ethical, environmental and social consequences. In today's knowledge-driven societies, where awareness has increased, it is essential for innovations to not only possess technological sophistication, but also to acquire cognitive and moral legitimacy, which are both morally and socially desirable. Several studies emphasize that RI can attract stakeholders who prefer to engage with ethical, sustainable and socially responsible businesses (Memon et al., 2023).

Responsible innovation provides an approach that revolves around stakeholders. This approach promotes innovation while considering ethical, environmental and collective themes. In today's knowledge-based societies where awareness has increased, it is essential that innovation not only has technological complexity, but must also acquire cognitive and moral legitimacy. Therefore, in this research, it is expected that digital leadership will show a multifaceted approach and will be examined through different leadership approaches, including interactive, transformational, and authoritative. This

prayer emphasizes that digital leadership is significantly different from conventional concepts of leadership. The identified roles include digital leader, digital innovator, digital enabler, digital manager, digital coach, digital network marketer and digital intern. The purpose of this study is to show that digital leadership can lead organizations to responsible innovation and thereby strengthen a competitive advantage. In this research, social orientation is used as a moderating variable and responsible innovation is a mediating variable that strengthens the relationship between digital leadership and competitive advantage. Therefore, in this research, we are trying to answer the question of whether digital leadership has an effect on competitive advantage, considering the mediating role of responsible innovation and moderating social orientation?

### **The Importance and Necessity of Research**

The advancement of technology in the shadow of the fourth industrial revolution has changed the way of life, work and communication by intensifying the digital transformation in the context of industry and society, which means a huge change in the way leaders perceive the organization of teams. This technological leap, by creating a paradigm shift and greatly affecting the functional areas of design and production systems, has made the need for new strategies, scenarios and leadership styles in order to overcome uncertainties even more colorful (Mehdi and Nasser, 2021). Therefore, many businesses in the world have been led towards digitalization in order to improve their competitiveness. The framework, companies should also move away from traditional leadership models and adopt more open models, and their managers have skills. Strengthen digital leadership in themselves, because with the upcoming conditions, especially the adaptation and change of business strategies, digital leadership is necessary for the survival and promotion of business activity (Babaei Farsani et al., 1400). In other words, considering the many crises and transformations in the present era and the complexity of relationships in the competitive market, digital leadership by providing the possibility of digital presence, by improving the competitive position of companies, the process of achieving organizational goals through successful virtual aspects is possible. accepts (Dijkstra, 2020). In addition, organizations are eager to showcase their digital transformation achievements. Also, the benefits of digital transformation provide an opportunity for innovation in organizations. These opportunities include how the business operates, the services it provides, the technology platforms it uses, how the business is organized, and where employees work. However, the dynamic and unpredictable market conditions caused by digital transformation increase the risks associated with making the wrong strategic decisions and cause changes in the company's strategy and business model. The lasting effects of disruption that characterize transformation mean that serious problems arise in terms of guiding and managing strategic transformation of companies at a time when the relentless pace of digital innovation creates great uncertainty (Henry, 2013; Oliver, 2018). Therefore, according to the contents that have been stated, it is important to address this issue .

### **Research Objectives**

#### **Research Main Objectives**

- 1- Investigating the effect of digital leadership on competitive advantage with regard to the mediating role of responsible innovation
- 2- Investigating the effect of digital leadership on competitive advantage with regard to the moderating role of social orientation

#### **Research Minor Objectives**

- 1- Investigating the effect of digital innovator on responsible innovation.
- 2- Investigating the effect of digital manager on responsible innovation.

- 3- Investigating the effect of digital networker on responsible innovation.
- 4- Investigating the effect of digital mentee on responsible innovation.
- 5- Investigating the effect of responsible innovation on competitive advantage
- 6- Investigating the effect of digital leadership on responsible innovation

### **Research Hypotheses**

#### **Research Main Hypotheses**

- 1- Digital leadership has significant effect on competitive advantage with regard to the mediating role of responsible innovation
- 2- Digital leadership has significant effect on competitive advantage with regard to the moderating role of social orientation

#### **Research Minor Hypotheses**

- 1- Digital innovator has significant effect on responsible innovation.
- 2- Digital manager has significant effect on responsible innovation.
- 3- Digital networker has significant effect on responsible innovation.
- 4- Digital mentee has significant effect on responsible innovation.
- 5- Responsible innovation has significant effect on competitive advantage
- 6- Digital leadership has significant effect on responsible innovation

### **Research Background**

Norouzi et al. (2023), during a study, investigated the impact of digital leadership on the performance of companies in dynamic environments: the role of dynamic capabilities, business model innovation and sustainable competitive advantage. The current research has a practical purpose and descriptive survey nature. The statistical population of the research was the managers of knowledge-based companies in Tehran province. The sample size was calculated with the help of version 3.1 of Gpower software, 244 people, and sampling was done using the non-probability method available. 240 questionnaires were collected by online survey and its reliability and validity were confirmed. Descriptive data was analyzed with SPSS software version 26 and the research model, based on the structural equation modeling approach, was analyzed with Smart PLS software version 3. Findings: The direct and indirect effect of digital leadership through capabilities the dynamism and innovation of the business model was confirmed on the performance of the companies. Also, the direct effect of digital leadership on sustainable competitive advantage was rejected; But its indirect effect was confirmed. In addition, the understanding of environmental dynamics only moderated the relationships between dynamic capabilities with "business model innovation, sustainable competitive advantage and company performance". Conclusion: The role of digital leadership is an important factor and a strategic necessity, in order to create transformation in order to Leading, supporting and managing employees in the middle of the digital age and provides key insight for leaders to strengthen digital leadership skills by abandoning traditional leadership styles. During a study, Zare and Pashazadeh (2023) investigated the impact of strategic flexibility and digital leadership on digital transformation and exploratory innovation with the mediating role of digital entrepreneurship orientation. The current research is applied in terms of purpose and

descriptive-survey research in terms of method. The statistical population of the research included 180 active companies in the science and Technology Park and growth and innovation centers of West Azarbaijan province, and based on Morgan's table, 123 companies were selected as a sample and the questionnaires were distributed and completed in a non-random way. In order to analyze the data, SPSS 26 and Smart PLS 4 software were used. Based on the hypothesis test, the direct effect of digital leadership and strategic flexibility on digital transformation and exploratory innovation was confirmed. Also, the effect of digital leadership through digital entrepreneurship orientation on exploratory innovation was also confirmed. The results indicate that success in the field of digital transformation is directly related to the characteristics and capabilities of the organization's leaders. By creating the necessary conditions for a culture of innovation and sustainable change in the organization, the leaders of the organization play a significant role in the success and sustainability of the organization in the era of digital transformation. In the process of digital transformation, only using digital technologies to guide the organization to achieve goals is not enough, but it is digital leadership that plays a role as the initiator and pioneer of digital transformation.

Benitez et al. (2022), during a study, investigated the effect of digital leadership capability on innovation performance: the role of platform digitalization capability. Following a hybrid approach, they theorized that digital leadership influences innovation performance by digitizing the firm's platform. A multiple case study of ten companies was used to derive a theoretical model related to digital leadership and innovation performance. The obtained model was empirically tested on a sample of 117 European companies. They found that digital leadership improves the company's innovation performance by digitizing the company's platform. They contribute to IS research by theoretically developing the concepts of digital leadership capability and platform digitalization capability and empirically analyzing the relationship between these two critical IT capabilities and their impact on innovation performance.

Yao et al. (2023), during a study, investigated the influence of digital leadership on digital transformation: the role of digital strategy consensus and types of diversity. The results show that digital leadership has a positive effect on digital transformation. Digital strategic consensus partially mediates the relationship between digital leadership and digital transformation. Diversity and diversity moderate the mediating role of digital strategic consensus between digital leadership and digital transformation, respectively. And diversity separation negatively moderates the mediating role of digital strategic consensus between digital leadership and digital transformation.

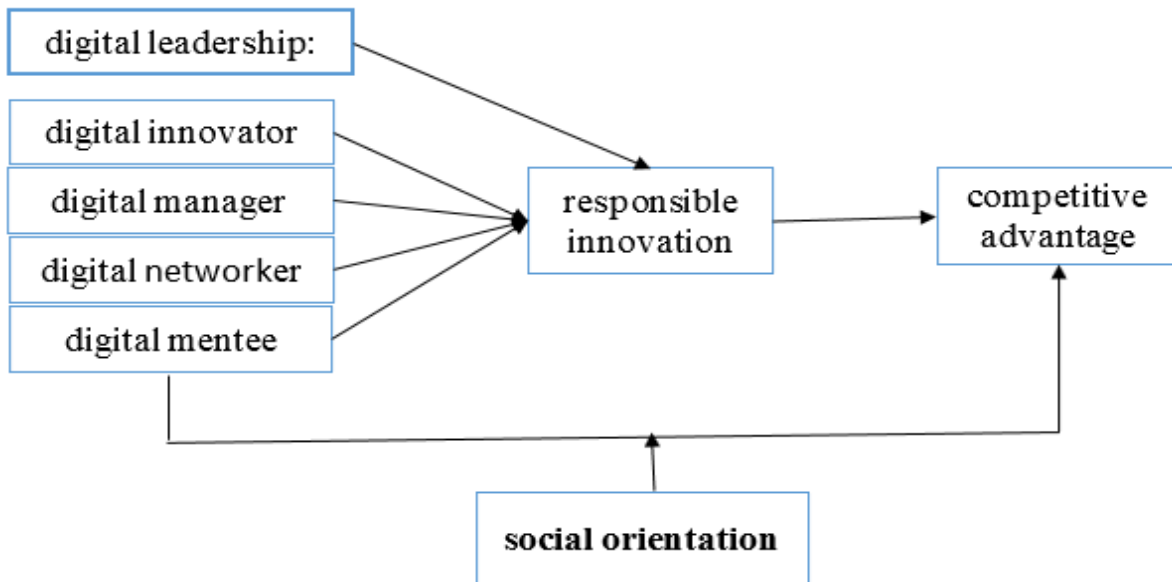
Farida and Setiawan (2022), during a study, investigated business strategies and competitive advantage: the role of performance and innovation in the Journal of Open Innovation: Technology, Market and Complexity. This study aims to investigate the effect of business strategies in improving the competitive advantages of small and medium enterprises (SMEs). In addition, our study considers the importance of performance and innovation as mediating variables in the relationship between business strategies and competitive advantage. The research sample includes 150 small and medium companies in the construction and real estate industry. Our findings show that business strategies have a positive effect on competitive advantage. Better business strategies improve the competitive advantage of SMEs. In addition, business performance and innovation also mediate the relationship between business strategies and competitive advantages. These results provide evidence of the importance of performance and innovation to improve competitive advantage. It is suggested that SMEs improve their performance and innovation capability to strengthen their competitive advantages.

Priyanto et al. (2023), during a study, examined the relationship between robotic process automation, digital business strategy and competitive advantage in the banking industry. This study shows that effective leadership and a culture that encourages the adoption of digital technology are critical to the successful implementation of these strategies. He also emphasized the importance of managers' strong understanding of digital tools and business strategy to identify opportunities and threats related to the

company's digital strategy. Overall, this study emphasizes the need for businesses to stay up-to-date with digital technology and modernize to remain competitive in today's digital world.

### Conceptual Research

The research model is based on the study of Memon, K. R., & Ooi, S. K. (2023).



### Method

This study in terms of method is descriptive-survey research and in terms of purpose is applied research.

### Statistical Population

The statistical population of this study is the managers, experts, supervisors and experts on the DigiKala site, which their number is 300 people.

### Sampling Method and Determination of Sample Size

The sampling method used in this research is simple random sampling. In order to estimate the sample size, Cochran's formula was used

$$n = \frac{\frac{z^2 \times p \times q}{d^2}}{1 + \frac{1}{N} \left( \frac{z^2 \times p \times q}{d^2} - 1 \right)} = \frac{\frac{1/96^2 \times 0/5 \times 0/5}{.05^2}}{1 + \frac{1}{300} \left( \frac{1/96^2 \times 0/5 \times 0/5}{0/05^2} - 1 \right)} = 169$$

Considering the confidence level of 95% and accepting the error of 5% and considering the standard deviation of 0.5, the required sample size is equal to 169 people .

### Research Findings

Testing the Main Hypotheses of the Research by Path Analysis

In this research, the structural equation model and especially the path analysis have been used to confirm or reject the hypotheses. Path analysis (structural model) is a technique that shows the relationships between research variables simultaneously .

In the following figure, the structural equation model is presented in the standard estimation mode for testing the main hypotheses of the research:

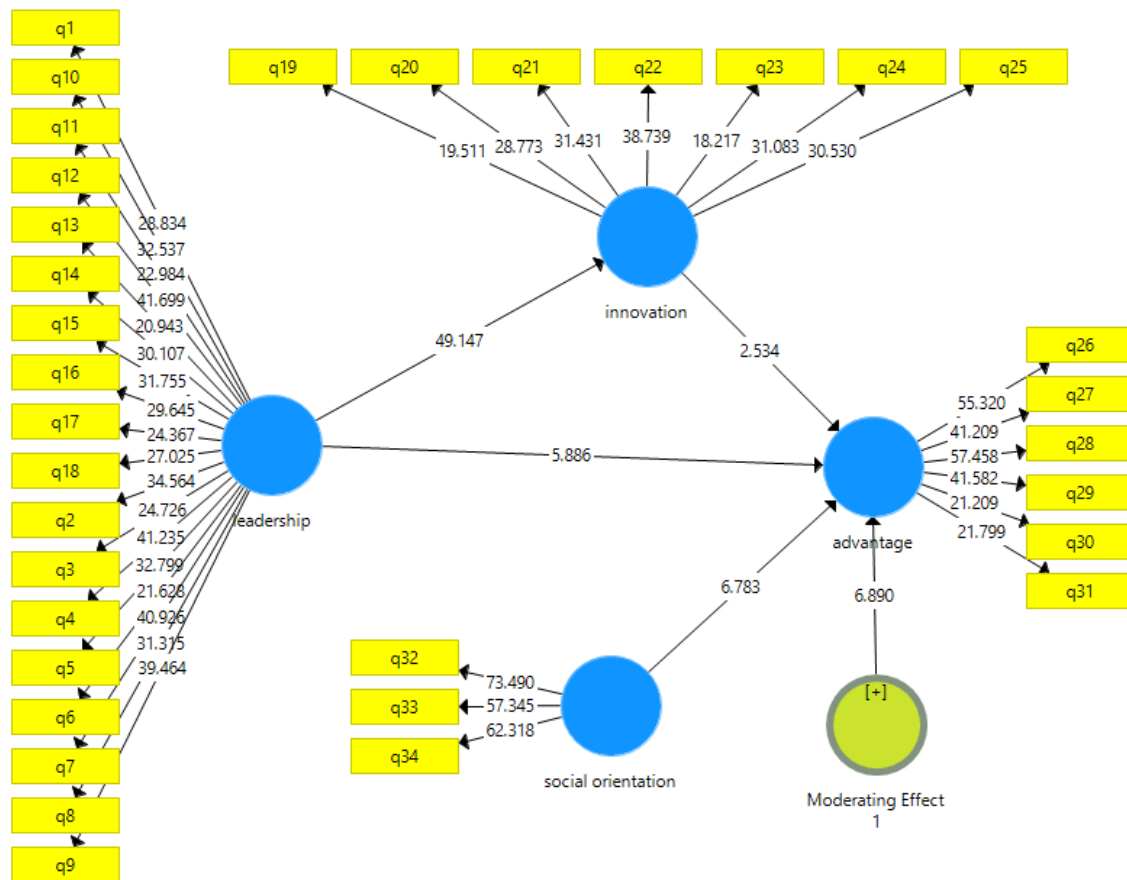


figure 2-Structural equation model in significant mode for the main hypotheses

**Testing Sub-Hypotheses of the Research by Path Analysis**

In the following figure, the structural equation model is presented in the standard estimation mode for testing minor-hypotheses:

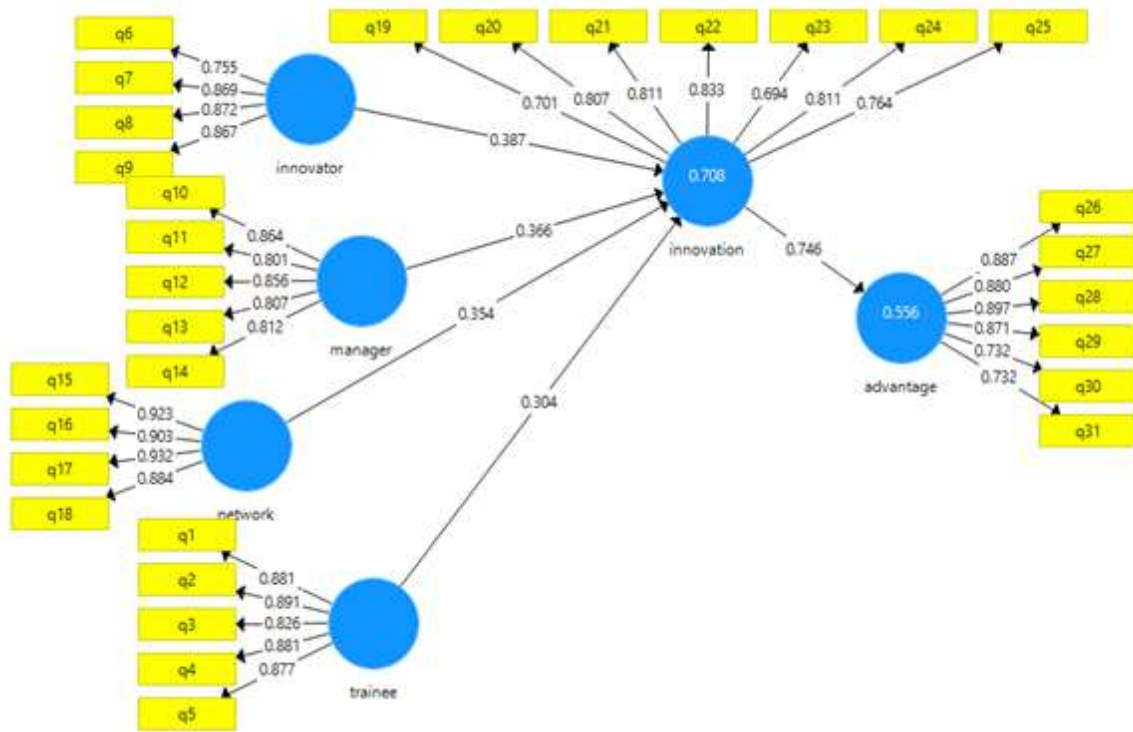


Figure 3: Structural equation model in standard estimation mode for minor hypotheses

The next output, i.e. the figure below, shows the model in the significance state of the obtained coefficients and parameters

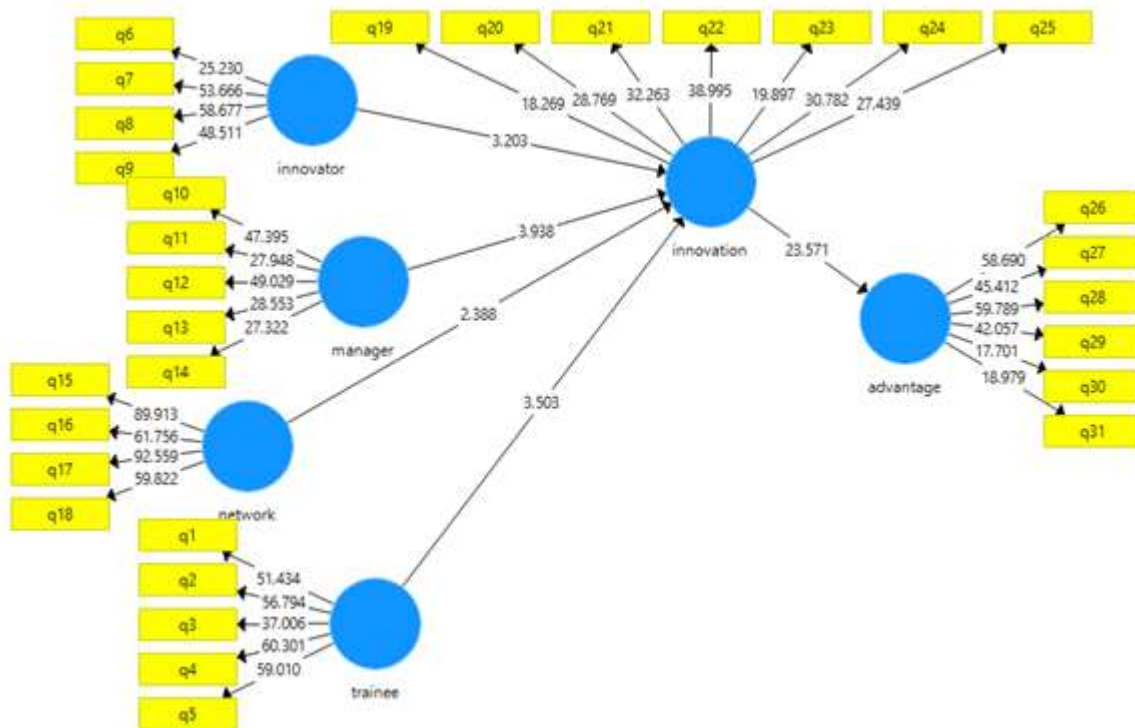


Figure 4: Structural equation model in significant mode for minor-hypotheses



## ***Analysis of Research Hypotheses***

### **The First Main-Hypothesis**

Digital leadership has significant effect on competitive advantage with regard to the mediating role of responsible innovation

The result of the investigating the first main-hypothesis of the research is shown in the table below:

Table 1: investigating the first main-hypothesis of the research

<b>Research Hypothesis</b>	<b>path coefficient</b>	<b>T_Value</b>	<b>Result of Test</b>
Digital leadership has significant effect on competitive advantage with regard to the mediating role of responsible innovation	0.51	5.25	Confirmed

As the above table shows, according to the Sobel test to measure the mediator variable, the reported t-statistic is equal to 5.25. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the first main-hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.51, so it can be said that the first main-hypothesis of the research is confirmed. That is, the digital leadership has significant effect on competitive advantage with regard to the mediating role of responsible innovation

### **The Second Main-Hypothesis**

Digital leadership has significant effect on competitive advantage with regard to the moderating role of social orientation

The result of the investigating the second main-hypothesis of the research is shown in the table below:

Table 2: investigating the second main-hypothesis of the research

<b>Research Hypothesis</b>	<b>path coefficient</b>	<b>T_Value</b>	<b>Result of Test</b>
Digital leadership has significant effect on competitive advantage with regard to the moderating role of social orientation	0.32	6.89	Confirmed

As the above table shows, the reported t-statistic is equal to 6.89. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the second main-hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.32, so it can be said that the second main-hypothesis of the research is confirmed. That is, the digital leadership has significant effect on competitive advantage with regard to the moderating role of social orientation.

**The First Minor-Hypothesis:** digital innovator has a significant effect on responsible innovation.

The result of the investigating the first minor-hypothesis of the research is shown in the table below:

Table 3: investigating the first minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
digital innovator has a significant effect on responsible innovation.	0.38	3.20	Confirmed

As the above table shows, the reported t-statistic is equal to 3.20. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the first sub-hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.38, so it can be said that the first sub-hypothesis of the research is confirmed. That is, the digital innovator has a significant impact on responsible innovation. Therefore, if digital innovation increases by one unit, then responsible innovation increases by 0.38 units.

**The Second Minor-Hypothesis:** Investigating the effect of digital manager on responsible innovation.

The result of the investigating the second minor-hypothesis of the research is shown in the table below:

Table 4: investigating the second minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
Investigating the effect of digital manager on responsible innovation	0.36	3.93	Confirmed

As the above table shows, the reported t-statistic is equal to 3.93. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the second minor -hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.36, so it can be said that the second minor -hypothesis of the research is confirmed. That is, the digital manager has a significant impact on responsible innovation. Therefore, if digital manager increases by one unit, then responsible innovation increases by 0.36 units.

**The Third Minor-Hypothesis:** Investigating the effect of digital networker on responsible innovation.

The result of the investigating the third minor-hypothesis of the research is shown in the table below:

Table 5: investigating the third minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
Investigating the effect of digital networker on responsible innovation	0.35	2.38	Confirmed

As the above table shows, the reported t-statistic is equal to 2.38. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the third minor -hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.35, so it can be said that the third minor -hypothesis of the research is confirmed. That is, the digital networker has a significant impact on responsible innovation. Therefore, if digital networker increases by one unit, then responsible innovation increases by 0.35 units.

**The Fourth Minor-Hypothesis:** Investigating the effect of digital mentee on responsible innovation.

The result of the investigating the fourth minor-hypothesis of the research is shown in the table below:

Table 6: investigating the fourth minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
Investigating the effect of digital mentee on responsible innovation	0.30	3.50	Confirmed

As the above table shows, the reported t-statistic is equal to 3.50. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the fourth minor -hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.30, so it can be said that the fourth minor -hypothesis of the research is confirmed. That is, the digital mentee has a significant impact on responsible innovation. Therefore, if digital mentee increases by one unit, then responsible innovation increases by 0.30 units.

**The Fifth Minor-Hypothesis:** Investigating the effect of responsible innovation on competitive advantage.

The result of the investigating the fifth minor-hypothesis of the research is shown in the table below:

Table 7: investigating the fifth minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
Investigating the effect of responsible innovation on competitive advantage	0.74	23.57	Confirmed

As the above table shows, the reported t-statistic is equal to 23.57. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the fifth minor -hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.74, so it can be said that the fifth minor -hypothesis of the research is confirmed. That is, the responsible innovation has a significant impact on competitive advantage. Therefore, if responsible innovation increases by one unit, then competitive advantage increases by 0.74 units.

**The Sixth Minor-Hypothesis:** Investigating the effect of digital leadership on responsible innovation.

The result of the investigating the sixth minor-hypothesis of the research is shown in the table below:

Table 8: investigating the sixth minor -hypothesis of the research

research hypothesis	path coefficient	T_Value	Result of Test
Investigating the effect of digital leadership on responsible innovation	0.83	49.14	Confirmed

As the above table shows, the reported t-statistic is equal to 49.14. Considering that this statistic is greater than 1.96, we conclude that the test statistic is in the critical area, and as a result, the sixth minor-hypothesis of the research is accepted at a significance level of 0.05. The effect coefficient obtained is equal to 0.83, so it can be said that the sixth minor -hypothesis of the research is confirmed.

That is, the digital leadership has a significant impact on responsible innovation. Therefore, if digital leadership increases by one unit, then responsible innovation increases by 0.83 units.

Table 9: investigating the Confirmation or Rejection of Research Hypotheses

Research Hypotheses	Significant level	Path coefficient	Confirmation or Rejection
Digital leadership has significant effect on competitive advantage with regard to the mediating role of responsible innovation	5.25	0.51	Confirmed
Digital leadership has significant effect on competitive advantage with regard to the moderating role of social orientation	6.89	0.32	Confirmed
Investigating the effect of digital innovator on responsible innovation	3.20	0.38	Confirmed
Investigating the effect of digital manager on responsible innovation	3.93	0.36	Confirmed
Investigating the effect of digital networker on responsible innovation	2.38	0.35	Confirmed
Investigating the effect of digital mentee on responsible innovation	3.50	0.30	Confirmed
Investigating the effect of responsible innovation on competitive advantage	23.57	0.74	Confirmed
Investigating the effect of digital leadership on responsible innovation	49.14	0.83	Confirmed

## Discussion

Research findings reveal strong and positive relationships between digital leadership, responsible innovation and competitive advantage. Furthermore, this study emphasizes the central role of responsible innovation as a mediator and emphasizes the moderating effect of social orientation. In addition, this research adopted a mixed analytical approach, integration. The study states that responsible innovation serves as a critical enabler for digital leadership to achieve competitive advantage. To foster this path, digital leaders need to embody a strong social orientation, especially since their primary focus revolves around the technological side. This orientation empowers digital leaders, encouraging them to act as catalysts, fostering environmental awareness, ethical practices and adherence to responsible innovation initiatives and strategies. Apparently, this study highlights the profound importance of digital leadership in the rapidly evolving digital landscape. It emphasizes and provides a key opportunity for innovative organizations to exploit previously unknown business prospects. The impact of digital leadership on organizational success is significant, requiring leaders to integrate sustainable initiatives to mitigate the adverse effects of the rebound effect. Existing literature strongly supports that digital leaders can significantly enhance a company's overall performance. In response to intensifying environmental and sustainability concerns, there is a growing need for digital leadership and environmentally conscious development. The emergence of digital technologies is changing company growth strategies and contributing to the dynamic digital economy amid these rapid developments. Corporate sustainability can only be achieved through the innovative leverage of digital technology, and digital leaders who embrace social responsibility are more likely to create innovations that align with social, environmental, and ethical norms, making them not only acceptable but desirable. Responsible actions by digital leaders not only foster trust among stakeholders, but also create a sense of attachment and social identity. Companies can achieve increased sales, profits, and ultimately competitive advantage.

## Conclusion

This study represents a pioneering effort that examines the interaction between digital leadership, social orientation, responsible innovation, and competitive advantage in the field of innovative firms. It provides a thorough review of digital leadership characteristics and roles, revealing their profound potential to drive responsible innovation and subsequently drive businesses to competitive advantage.

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