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# The role of social responsibility in enhancing social entrepreneurship: The mediating effect of big data analytics-based knowledge management

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ABSTRACT

This study explores the mediating role of big data analytics (BDA)-based knowledge in the relationship between social responsibility (encompassing ethical behavior, environmental sustainability, social impact, stakeholder engagement, economic responsibility, collaboration, and partnerships) and social entrepreneurship within Jordan's telecommunications sector during the 2023-2024 fiscal year. Using a quantitative approach, a self-administered questionnaire was distributed to a random sample of 150 managers across various organizational levels. The findings indicate that BDA significantly strengthens the link between social responsibility and social entrepreneurship, suggesting that data-driven insights enhance an organization's ability to identify societal opportunities and foster entrepreneurial initiatives. The study underscores the importance of leveraging technology to align business strategies with social impact, offering practical implications for organizations seeking to define and implement their social responsibilities more effectively.



## 1. Introduction

With the entry of modern technologies into the business world, the relationship between social responsibility and social entrepreneurship has become complex and intertwined due to the introduction of modern and technical concepts and practices. This relationship has proven that social responsibility, in addition to social entrepreneurship, plays a decisive role in directing organizations towards adopting the foundations of sustainable development and enhancing the foundations of community well-being. Rifai and Sa'd (2022) emphasized the importance of corporate entrepreneurship in economic prosperity (Kimmitt et al., 2020; Soluk et al., 2021), and thus improving job opportunities through higher sales and creating many job opportunities in organizations. Also, Rifai et al. (2023) identified the reality of Business incubators and their role in supporting entrepreneurship in society in general and within higher education institutions in particular, and showed that Business Incubators provide a variety of services to strongly support the launching of new startups and improving existing organizations by spreading the culture of entrepreneurship.

Khaskheli et al. (2020) indicated that social responsibility relates to the organization's commitment to making a positive contribution to society in terms of ethical practices and sustainability, and reaching a stage of balance between profit returns and the well-being of society. As for the level of social entrepreneurship, it was pointed out that social entrepreneurship depends on organizations trying to find innovative solutions to social problems and challenges. Abbas (2020) emphasized that for an organization to be a social leader, it must be able to see business opportunities that will meet the needs of society based on sustainable business models that can expand and attract new investments with a positive impact.

Reaching the stage of gathering between social responsibility and social entrepreneurship requires an organization to have the needed experience, stability, and information that lead its decision towards what is accepted and sustained. This means that the entry of technology will do the trick, and by technology we mean here big data analytics. Through facilitating the process of identifying the value of data gathered, and processing these data in order to reach a specific experience has the ability to give the organization a better chance to be rational (Kickul and Lyons, 2020). Therefore, as we have agreed on before that for an organization to be a

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social entrepreneur, it must be able to see business opportunities that will meet the needs of society. We formulate the hypothesis that the gathering between social responsibility and social entrepreneurship needs a mediator that can be able to facilitate their merger. From that point, it can be stated that the main aim of the current study is to explore the mediating influence of big data analytics-based knowledge on the relationship between social responsibility and social entrepreneurship.

In other words, the current study seeks to answer the following main question: Does big data analytics-based knowledge mediate the relationship between social responsibility and social entrepreneurship?

Answering the aforementioned question can be done through realizing the following objectives:

- Explore the relationship between social responsibility and social entrepreneurship.
- Examine the relationship between social responsibility and big data analytics-based knowledge.
- Identify the relationship between big data analytics-based knowledge and social entrepreneurship.

### 1.1. Social responsibility

Okafor et al. (2021) defined social responsibility as the ethical commitment of individuals, organizations, and companies to make decisions and adopt correct actions that will benefit society. This concept means that all members of society-individuals, citizens, and organizations-are able to bear responsibility towards society regarding various decisions and actions and understand their impact on individuals, communities, and the environment (Fatima and Elbanna, 2023).

Al-Omoush et al. (2020) argued that social responsibility includes full and frank recognition that the individual, organization, and company have a greater impact than simply achieving financial profits, and that everyone must contribute to achieving the interests of society in a positive way. The idea that an organization, individual, or any entity operating in society has a social responsibility means that this entity must be fully aware and aware of the following:

- Sustainability in all its forms: This refers to adopting decisions and practices that will sustain resources and reduce the negative effects of regular business on society and the environment. This includes adopting environmentally friendly practices, reducing carbon emissions, controlling waste, and working to ensure sustainable practices.
- Ethics in business environment practices: means that the organization or working entity must be ethical, honest, and transparent in dealing with individuals and other organizations. In addition to treating employees in a way that guarantees their rights, privacy, and humanity, and avoids unethical practices such as corruption, bribery, and exploitation.
- Adopting an active role in charitable activity: That is, the organization must have a significant role and reputation in charitable activities, community initiatives, and volunteer work, with the aim of improving the general well-being of society and its members.
- Diversity and inclusion of the workplace: For an organization to have social responsibility means working within a diverse and comprehensive work environment based on providing job opportunities for all individuals, far from bias, and including all segments of society within its work environment.
- Adopting the foundations of consumer protection: Socially responsible organizations must be honest and transparent in their marketing campaigns, provide accurate information about the product or service, and guarantee, through their marketing practices, the right of the consumer and the individual to address their concerns and answer their inquiries.

On another level, many scholars and academics, such as Afsar and Umrani (2020), have gone through the concepts of what makes an organization socially responsible. This has led us to the conclusion that being socially responsible means that an organization has to take a crucial part in being economically responsible. According to Cardinali and De Giovanni (2022), being economically responsible means that an organization is committed to contributing to the well-being of society through business that is capable of generating value for society. Among the factors of economic responsibility of organizations are their profitability, ability to continue, and providing a return to shareholders. In addition to creating job opportunities for all segments of society, and full compliance with the laws, regulations, and legislation imposed by the state related to taxes, fair competition, and humane work.

On another level, a socially responsible organization has to be able to engage its stakeholders in all forms of its activities. This means that stakeholder engagement is a part of being socially responsible through involving individuals, stakeholders, and different groups in the organization's activities, practices, and the results of its decisions. With reference to stakeholders, they are usually individuals from employees, customers, suppliers, and local communities in their various forms, whether governmental or non-governmental (Pfajfar et al., 2022).

As Brenner and Hartl (2021) and Herden et al. (2021) stressed that in order for the organization to be socially responsible, it must enter into partnerships and cooperation with various governmental and private agencies in order to achieve its societal goals and ensure a high level of well-being for society. These partnerships and collaborations involve leveraging the expertise,

resources, and networks of various third parties in order to maximize positive impact.

### 1.2. Social entrepreneurship

Al Omoush et al. (2018) defined social entrepreneurship as one of the concepts related to the business environment in which entrepreneurs aim to achieve a positive impact on society by arriving at developing ideas and applying them on the ground through a set of solutions that would create a positive impact on society. Entrepreneurs usually aspire to transform the entrepreneurial opportunities, ideas, and goals they have into business opportunities that can be implemented.

Social entrepreneurship stems from targeting positive social change in an innovative and, at the same time, sustainable way. This means that instead of the organization focusing on profit and achieving financial profits, it moves to solving society's problems and improving the lives of citizens by providing services and products capable of meeting their needs and solving their problems (Gupta et al., 2020).

The principle of social entrepreneurship, for example, leads entrepreneurs to establish non-profit organizations or social organizations that aim to identify the causes of recognized social problems and try to solve them, such as poverty, unemployment, illiteracy, health, environment, and many other social issues (Kickul and Lyons, 2020; Homsi et al., 2020). Thus, business models are adopted that are capable of generating financial income for organizations and, at the same time, contribute to solving society's problems within the economic, social, and environmental dimensions.

Al-Omoush (2021) confirmed that the concept of social entrepreneurship is considered one of the most important organizational tools through which the required balance can be achieved between financial profitability and social impact. Anh et al. (2022) and Rayamajhee et al. (2022) agree with Al-Omoush (2021) when they pointed out the idea that social entrepreneurship encourages creative thinking and is based on adopting comprehensive approaches capable of confronting societal challenges and, at the same time, enhancing cooperation between various sectors.

### 1.3. Big data analytics-based knowledge

Big Data Analytics-Based Knowledge refers to the total insights, analyses, and decisions that the organization derives from analyzing the huge data that flows to it based on many advanced and intelligent analytical techniques. The knowledge process based on big data analytics includes relying on analyzing huge amounts of data in order to identify patterns, trends, and relationships that exist between the collected data (Choi et al., 2024). This data is usually collected in order to make decisions and gain experiences that will maximize competitive capabilities between organizations (Nazari et al., 2020; Hashem et al., 2024). Özemre and Kabadurmus (2020) pointed out that big data analytics includes many different technologies and software that process large amounts of organized and unorganized data, including social media, sensors, and various digital platforms.

Organizations rely on big data analytics techniques in order to reach a deeper understanding of customer behavior, in addition to collecting the largest possible amount of customer data that can later be employed in the marketing process. Decisions based on big data analytics are characterized by their ability to give a future view of important aspects of the organization's work, thus enabling the decision-making process and identifying the most appropriate processes for making organizational decisions (Ghasemaghaei, 2019).

According to various scholars, social responsibility refers to the idea that individuals, organizations, and companies have a moral obligation to make decisions that benefit society. This includes environmental management, ethical business conduct, philanthropy, community service, workplace diversity and inclusion, and consumer protection. Social responsibility, therefore, emphasizes not only financial performance but also broader social impacts. Economic accountability and stakeholder participation in organizational processes are key components of this concept. The literature suggests that integration, strong managerial capacity, and collaboration with public and private sectors are essential for maximizing positive societal outcomes.

Social entrepreneurship is defined as an approach in which entrepreneurs develop innovative ways to create positive social change. Its primary goal is to generate social value rather than profit. Social entrepreneurs establish ventures to address societal challenges such as poverty, unemployment, and environmental degradation through effective and sustainable business models. Thus, social entrepreneurship involves creating long-term solutions that benefit society while also achieving economic viability.

Big Data Analytics-based knowledge involves extracting insights, patterns, and decisions from large volumes of data using advanced analytical methods. Organizations use big data analytics to identify trends, relationships, and customer behaviors that support better decision-making and enhance competitive advantage. This process requires analyzing diverse data sources, such as social media and sensor inputs, to develop a deeper understanding of consumer needs and to improve marketing strategies. Big data-driven insights also help organizations anticipate future conditions and select appropriate structures and strategies.

In summary, the integration of social responsibility, social entrepreneurship, and big data analytics provides an ethical, innovative, and socially responsive foundation for managerial practice. When applied effectively, these principles enable

organizations to strengthen their competitive advantage while contributing to sustainable societal development.

### 1.4. Hypotheses development

Hammerström et al. (2019) in their study tried to understand digital transformation and its relationship to the concept of social responsibility of organizations. Researchers indicated that the social responsibility of organizations includes the practices carried out by the organization and their suitability for society, or the negative effects that these practices may have on society. Through a review of previous literature, researchers reached the conclusion that it is possible for organizations' social responsibility to be driven by digital transformation through the impact that digitalization can have on the value creation process. The researchers also indicated that, specifically among the digitization techniques, big data analysis was chosen in their study.The study confirmed that the outputs of big data analysis would contribute to identifying areas of social responsibility (environmental, social, and economic) for organizations by justifying investments, especially in the field of manufacturing, which is considered to have the most impact on the environment and therefore the most negative in the field of social responsibility.

Wang et al. (2020) aimed to reveal the relationship between corporate social responsibility, green supply chain management, and organizational performance through the moderating role of big data analytics. The quantitative approach was adopted through an analysis of data from 260 samples from the Chinese manufacturing industry in three different periods. The study demonstrated that big data analytics had a clear and positive modifying role on the relationship between external CSR and green supply chain management. The moderating influence of BDA appeared through environmental awareness and partnership with external interested parties.

Zhu et al. (2022) aimed to demonstrate the impact of organizations' social responsibility on the sustainable supply chain and organization performance through the mediating role of big data analytics. Through the quantitative approach, questionnaires were analyzed with a sample of 320 individuals. The study demonstrated that big data analytics mediates the relationship between social responsibility, a sustainable supply chain, and organizational performance, and the mediation between them was positive. This influence appeared through the ability of big data analytics to enhance the interest of organizations towards being more socially involved through involving stakeholders (internal and external).

Ciampi et al. (2021) aimed in their study to explore the relationship between big data analytics capabilities, business model innovations, and their combination's Impact on the entrepreneurial orientation of the organization. The quantitative approach was adopted by analyzing data from 253 British organizations. The results of the study demonstrated a significant impact of big data analytics on entrepreneurial orientation through a direct impact on business models and the competitive capabilities of the organization. The study also found that big data analytics provide real, real-time information about an organization's innovation and leadership points by focusing on stakeholder engagement and the organization's environmental impact.

Dubey et al. (2020) aimed to demonstrate the relationship between big data analytics and improving performance through a positive impact on the organization's entrepreneurial orientation. A quantitative approach was adopted by collecting primary data from 256 individuals within manufacturing companies in India with the assistance of the National Association of Software and Services Companies (NASSCOM) and the Federation of Indian Chambers of Commerce and Industry (FICCI). The study reached the conclusion that the organization's exploitation of the outputs of big data analysis is capable of positively influencing the entrepreneurial orientation by clarifying the areas of investment and entrepreneurship and identifying the environmental dynamics that would ensure successful entrepreneurial investments. The study also found that big data analytics supports entrepreneurial orientation by providing theoretically grounded guidance for organizations to align work with their technological capabilities within their companies.

A review of previous studies shows a clear gap in research that simultaneously examines social responsibility, big data analytics, and social entrepreneurship. Most existing studies focus on the impact of big data analytics on either social responsibility or social entrepreneurship separately. However, to the best of the researcher’s knowledge, no study has integrated all three variables within a single framework. Therefore, the present study aims to investigate the role of social responsibility in improving the effectiveness of social entrepreneurship, with big data analytics–based knowledge management serving as a mediating factor.

It is worth mentioning here that the current study was launched from the theoretical premises of the Resource-Based View (RBV), which was coined by the Danish economist Birger Wernerfelt back in 1984. This theory confirmed that organizations develop abilities and capabilities through exploiting the available resources. Based on that, in this study, big data analytics-based knowledge management can be viewed as a valuable resource that mediates the relationship between social responsibility and social entrepreneurship effectiveness.

## 2. Research methodology

The current study started by adopting the quantitative approach by focusing on the standard experimental scientific approach. Through the

quantitative approach, the current study focused on collecting primary data and analyzing it statistically. The goal of choosing a quantitative approach is due to the need to understand phenomena and relationships in a way that can be measured quantitatively and statistically.

### 2.1. Measurements and control variables

The current research adopted dimensions of social responsibility that included (ethical behavior, environmental sustainability, social impact, stakeholder engagement, economic responsibility, collaboration, and partnerships). We have aligned the controls with the previous studies and literature review presented earlier. We have asked respondents to answer questions related to the adopted variables in order to test their attitudes regarding the relationship between the variables presented in Fig. 1.

### 2.2. Sample procedure, data collection, and data analysis strategy

The study population consisted of managers at all administrative levels in Jordanian telecommunications companies during the fiscal year 2023–2024. A simple random sample of 177 managers was selected to represent this population. The primary data were collected using a questionnaire, which served as the main research instrument. The questionnaire included two main sections: the first covered demographic variables (age, gender, educational qualification, and years of experience), and the second comprised items measuring the study variables using a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree).

The telecommunications sector was chosen as the focus of this study because it has strong potential to support social entrepreneurship (SE) through its extensive networks, advanced technologies, and strategic partnerships. By collaborating with social entrepreneurs, telecommunications companies can help reduce the digital divide and enhance the social capital of disadvantaged groups by providing access to communication tools. Through services such as mobile data, voice solutions, and internet connectivity, telecom firms enable social entrepreneurs to deliver social services, education, and business opportunities to underserved populations, thereby contributing to sustainable development.

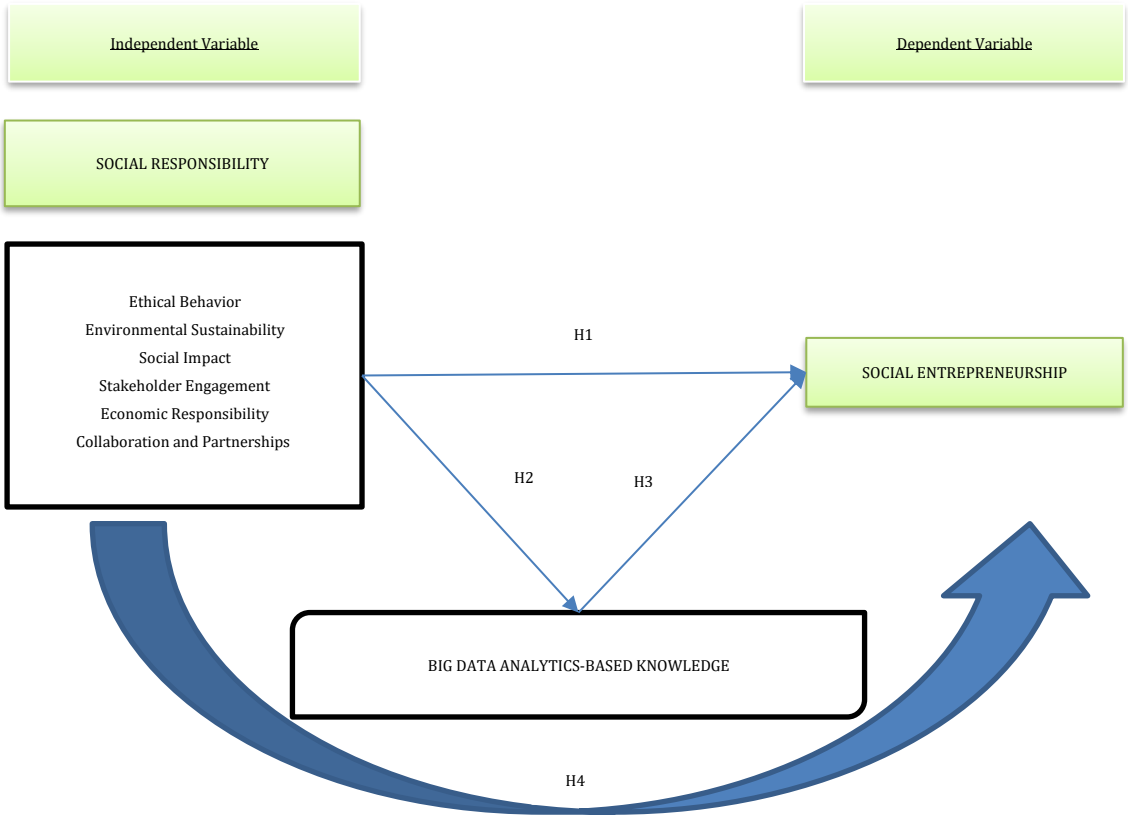


**Fig. 1:** Study model

Furthermore, the telecommunications industry can directly support SE by implementing programs that promote technological literacy, entrepreneurship, and innovation hubs for social enterprises. Encouraging initiatives that develop young social entrepreneurs can expand the innovation ecosystem that telecom companies help sustain. Thus, the sector is well positioned to assist social entrepreneurs in creating long-term, effective solutions that improve well-being and generate social value.

To ensure the validity of the questionnaire items, four experts and academics in the relevant field reviewed the instrument and recommended

modifications and deletions where necessary. The final version of the questionnaire contained 40 items, as shown in Table 1.

**Table 1:** Questionnaire items according to variables

| Variable | No. of statement |
|---|---|
| **Social responsibility** | |
| Ethical behavior | 5 |
| Environmental sustainability | 6 |
| Social impact | 5 |
| Stakeholder engagement | 5 |
| Economic responsibility | 5 |
| Collaboration and partnerships | 5 |
| Social entrepreneurship | 6 |
| Big-data analytics-based knowledge | 6 |

To facilitate the collection of primary data and maximize the response rate, the questionnaire was uploaded online using Google Forms and remained accessible for five weeks. After the data collection period, the researcher received 150 fully completed questionnaires out of the 177 distributed, yielding a response rate of 84.7%, which is considered statistically acceptable.

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 27. The statistical procedures employed in the study included the AMOS software for structural equation modeling, reliability analysis, factor analysis, and path analysis.

## 3. Results

### 3.1. Descriptive statistics of demographics

Table 2 presents the demographic characteristics of the study sample. The results show that most respondents were male, representing 70.7% of the total sample. In terms of age, the largest group of participants fell within the 40–50-year range, accounting for 41.3%. Additionally, 45.3% of the respondents reported having more than 20 years of work experience.

**Table 2:** Demographic statistics

| Demographic variable | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 106 | 70.7 |
| Female | 44 | 29.3 |
| **Age** | | |
| Less than 40 years | 29 | 19.3 |
| 40-50 years | 62 | 41.3 |
| 51-60 years | 37 | 24.7 |
| Above 60 years | 22 | 14.7 |
| **Experience** | | |
| Less than 10 years | 56 | 37.3 |
| 10-20 years | 26 | 17.3 |
| Above 20 years | 68 | 45.3 |
| Total | 150 | 100.0 |

### 3.2. Descriptive statistics of the questionnaire

Table 3 presents the results of questionnaire analysis according to individuals' responses. According to the data's mean and standard deviation, the majority of respondents held an optimistic viewpoint regarding questionnaire statements. The discrepancy arises because the mean of the inquiries surpasses the mean of the scale, which remains constant at 3. The reliability of the measurement instruments for multiple variables was assessed in the study through the utilization of factor analysis outcomes. The researcher obtained the most precise data feasible by employing PCA extraction and Varimax rotation techniques. In determining the questionnaire's validity, the researcher employed a convergent validity test, which is also known as a factor loading test. Table 3 provides a straightforward display of the test results. Following a thorough deliberation, a consensus was reached that artifacts exhibiting loadings exceeding 40% would be categorized as authentic. An additional investigation was conducted to assess the reliability of the scale by employing Composite reliability (CR), average variance extracted (AVE), and Cronbach's Alpha.

The reliability of the instrument was assessed through the utilization of Cronbach's alpha, which yielded a value exceeding 0.70. This evaluation validates the reliability and suitability of the instrument for the investigation. The results of the CR test suggest that the acquired value exceeds the critical value of 0.70 (Hair et al., 2010).

The researchers assessed discriminant validity in order to ascertain that every construct is unique in comparison to its adjacent constructs (Hair et al., 2012). In order to perform this analysis, we assessed the correlation matrix of latent constructs, where the square roots of the average variance extracted (AVE) were represented by the diagonal elements. The correlations among constructs are displayed in cells located beyond the diagonal in the lower left of the matrix. To qualify for this analysis, the variance shared between a construct and its measures must be more substantial than the variance shared among the constructs themselves and the remaining constructs in the model. As shown in Table 4, discriminant validity is thus attained when the square root AVE of the diagonal elements in the same row and column is greater than that of the off-diagonal elements.

### 3.3. Multicollinearity test

VIF and Tolerance analyses were performed on the independent variables in order to assess multicollinearity. Future discoveries that can be attributed to these computations are listed in Table 5. Since all Variance Inflation Factor (VIF) values are below 10 and all Tolerance values are above 0.10, the data do not contain any multicollinearity (Gujarati and Porter, 2009).

### 3.4. Descriptive statistics of hypotheses

Before beginning the structural analysis, the proposed research model has to be validated by employing a set of indicators to ensure that it is applicable to this study, as shown in Table 6.

**Table 3:** Questionnaire statistics

| | Mean | Standard deviation | Factor loading | CR | AVE | Cronbach alpha |
|---|---|---|---|---|---|---|
| Ethics in entrepreneurship resembles integrity and transparency. | 3.500 | 1.446 | .770 | | | |
| Adopting ethics in social responsibility exposes entrepreneurs to accountability in their actions. | 3.447 | 1.314 | .940 | | | |
| With ethics, trust can be built between stakeholders through solid foundations for their initiatives. | 3.400 | 1.215 | .921 | 0.936 | 0.746 | 0.904 |
| Ethical behavior can foster credibility in social entrepreneurship. | 3.420 | 1.233 | .861 | | | |
| Ethics can always align actions with societal values. | 3.373 | 1.185 | .772 | | | |
| Ethical behavior | 3.428 | 1.089 | | | | |
| Attention to environmental sustainability can orient efforts to urgent issues in the environment. | 3.193 | 1.219 | .815 | | | |
| Social entrepreneurs who adopt sustainable practices can always appear to socially responsible individuals. | 3.167 | .986 | .891 | | | |
| Through social responsibility, entrepreneurs can adhere to sustainable actions like waste management and renewable energy. | 3.127 | .936 | .874 | | | |
| A part of social responsibility is to encourage entrepreneurs to minimize less negative impact on the environment. | 3.273 | .933 | .854 | 0.924 | 0.672 | 0.897 |
| Socially responsible entrepreneurs appear to be more adherent to sustainable thinking. | 3.480 | .981 | .778 | | | |
| Adhering to sustainable thinking can increase acceptance of entrepreneurs, as they are socially entrepreneurial. | 3.320 | .992 | .690 | | | |
| Environmental sustainability | 3.260 | .823 | | | | |
| Social responsibility tends to make entrepreneurs appear more socially impactful. | 3.267 | 1.103 | .828 | | | |
| Pressing issues like poverty, inequality, or access to education and healthcare are a part of social responsibility that feed social entrepreneurship. | 3.287 | 1.089 | .848 | | | |
| Addressing social issues through social responsibility can maximize the effectiveness of social entrepreneurship. | 3.053 | 1.236 | .873 | 0.927 | 0.720 | 0.902 |
| Social responsibility makes sure that social entrepreneurship efforts are tangible and meaningful. | 3.007 | 1.250 | .890 | | | |
| Being socially responsible makes an individual a social entrepreneur. | 3.293 | 1.245 | .803 | | | |
| Social impact | 3.181 | 1.006 | | | | |
| Social responsibility considers stakeholder engagement as a crucial part of social entrepreneurship. | 3.487 | 1.041 | .882 | | | |
| Stakeholder engagement includes beneficiaries, local communities, employees, and partners. | 3.440 | 1.065 | .813 | | | |
| Listening to stakeholders can make social entrepreneurship more effective by acknowledging needs and aspirations. | 3.373 | .994 | .907 | 0.929 | 0.725 | 0.903 |
| To be socially entrepreneurial, organizations should co-create their goals with stakeholders. | 3.607 | .904 | .884 | | | |
| Social responsibility increases the effectiveness of entrepreneurial initiatives. | 3.373 | .894 | .763 | | | |
| Stakeholder engagement | 3.456 | .834 | | | | |
| Social responsibility requires an ethical management of financial resources. | 3.200 | 1.170 | .811 | | | |
| Socially responsible individuals make sure to reach economic viability. | 3.160 | 1.100 | .967 | | | |
| Through social responsibility, there would be to establish valid financial practices and sustainable revenue streams. | 3.387 | 1.073 | .933 | 0.957 | 0.816 | 0.942 |
| Social entrepreneurs make sure to ensure the efficient allocation of resources. | 3.140 | .997 | .826 | | | |
| Social entrepreneurs have the ability to maintain financial accountability and demonstrate economic viability. | 3.160 | 1.100 | .967 | | | |
| Economic responsibility | 3.209 | .981 | | | | |
| Social entrepreneurs, including nonprofits, businesses, and government agencies, are able to leverage complementary resources, expertise, and networks. | 3.400 | 1.081 | .910 | | | |
| There is no doubt that collaboration and partnership can enhance the effectiveness of entrepreneurship. | 3.153 | 1.008 | .867 | | | |
| Social responsibility can enhance and expand the pool of resources. | 3.253 | 1.082 | .905 | 0.952 | 0.80 | 0.938 |
| Collaboration and partnership can expand the reach and scope of entrepreneurship initiatives. | 3.487 | 1.028 | .930 | | | |
| Social entrepreneurs, including nonprofits, businesses, and government agencies, are able to leverage complementary resources, expertise, and networks. | 3.267 | .994 | .860 | | | |
| Collaboration and partnerships | 3.299 | .920 | | | | |
| Trust and credibility are enhanced through social responsibility. | 3.393 | 1.209 | .860 | | | |
| Environmental sustainability becomes a part of entrepreneurship through social responsibility. | 3.307 | 1.170 | .971 | | | |
| Social entrepreneurship guarantees economic responsibility and ensures the efficient allocation of financial resources. | 3.513 | 1.110 | .939 | 0.965 | 0.849 | 0.954 |
| social entrepreneurship is more collaborative and supportive of efforts of social responsibility. | 3.287 | 1.064 | .858 | | | |
| Social responsibility in social entrepreneurship extends beyond individual initiatives. | 3.307 | 1.170 | .971 | | | |
| Social entrepreneurship | 3.361 | 1.053 | | | | |
| BDA gives the opportunity for data-based decision-making. | 3.553 | 1.065 | .930 | | | |
| It enables entrepreneurs to inform their decision-making processes. | 3.333 | 1.028 | .927 | | | |
| BDA-based knowledge supports the reach to precise information in real-time. | 3.507 | 1.128 | .913 | | | |
| Big data analytics enables social entrepreneurs to measure and evaluate the impact of their initiatives accurately. | 3.273 | 1.092 | .909 | 0.971 | 0.847 | 0.963 |
| This knowledge allows entrepreneurs to adapt their initiatives and align them with social responsibility principles. | 3.527 | 1.034 | .916 | | | |
| BDA-based knowledge increases the engagement of stakeholders and shareholders to the benefit of the end outcomes of efforts. | 3.340 | 1.002 | .928 | | | |
| Big data analytics-based knowledge | 3.422 | .974 | | | | |

**Table 4:** Discriminant validity

| | Ethical behavior | Environmental sustainability | Social impact | Stakeholder engagement | Economic responsibility | Collaboration and partnerships |
|---|---|---|---|---|---|---|
| Ethical behavior | 0.864 | | | | | |
| Environmental sustainability | .742 | 0.819 | | | | |
| Social impact | 0.562 | 0.802 | 0.848 | | | |
| Stakeholder engagement | 0.61 | 0.734 | 0.82 | 0.851 | | |
| Economic responsibility | 0.491 | 0.595 | 0.809 | 0.80 | 0.903 | |
| Collaboration and partnerships | 0.592 | 0.67 | 0.779 | 0.81 | 0.88 | 0.89 |

According to the results in Table 7, all of the aforementioned indicators met both the minimum and maximum values required by the appropriate references, allowing us to test the following hypothesis:

**H1:** Social responsibility has a statistically significant effect on enhancing social entrepreneurship within telecommunications organizations in Jordan. This hypothesis is accepted (CR = 2.697; P < 0.05; P = 0.007). This means that social responsibility has a statistically significant effect on enhancing social entrepreneurship within telecommunications organizations in Jordan.

**H2:** Social responsibility has a statistically significant effect on enhancing big data analytics-based knowledge within telecommunications organizations in Jordan. This hypothesis is accepted (CR = 7.667; P < 0.05; P = 0.000). This means that social responsibility has a statistically significant effect in enhancing big data analytics-based knowledge within telecommunications organizations in Jordan.

**H3:** Big data analytics-based knowledge has a statistically significant effect in enhancing social entrepreneurship within telecommunications organizations in Jordan. This hypothesis is accepted (CR = 5.895; P < 0.05; P = 0.000). This means that big data analytics-based knowledge has a statistically significant effect in enhancing social entrepreneurship within telecommunications organizations in Jordan.

**H4:** Big data analytics-based knowledge mediates the relationship between social responsibility and social entrepreneurship. This hypothesis is accepted (CR = 2.697; P < 0.05; P = 0.007), and the indirect effect is 0.43, which is significant at the 0.05 level. This means that big data analytics-based knowledge mediates the relationship between social responsibility and social entrepreneurship.

**Table 5:** VIF and tolerance

| Variable | Tolerance | VIF |
|---|---|---|
| Ethical behavior | .852 | 1.174 |
| Environmental sustainability | .694 | 1.441 |
| Social impact | .855 | 1.170 |
| Stakeholder engagement | .719 | 1.390 |
| Economic responsibility | .515 | 1.941 |
| Collaboration and partnerships | .485 | 2.061 |

Fig. 2 illustrates the structural model and the key relationships obtained from the analysis.

**Table 6:** Fit model

| Indicator | AGFI | $X^2/df$ | GFI | RMSEA | CFI |
|---|---|---|---|---|---|
| Value recommended | > 0.8 | < 5 | > 0.90 | ≤ 0.10 | > 0.9 |
| References | Shevlin and Miles (1998) | Tabachnick and Fidell (2007) | Shevlin and Miles (1998) | MacCallum et al. (1996) | Hu and Bentler (1999) |
| Value of model | 0.928 | 1.184 | 0.972 | 0.035 | 0.969 |

AGFI: Adjusted goodness-of-fit index; GFI: Goodness-of-fit index; RMSEA: Root mean square error of approximation; CFI: Comparative fit index

**Table 7:** Hypotheses testing

| | Path | | Direct impact | Indirect impact | CR | P | Result |
|---|---|---|---|---|---|---|---|
| Big data analytics-based knowledge | <--- | Social responsibility | 0.759 | | 7.667 | *** | Supported |
| Social entrepreneurship | <--- | Social responsibility | 0.292 | 0.43 | 2.697 | .007 | Supported |
| Social entrepreneurship | <--- | Big data analytics-based knowledge | 0.566 | | 5.895 | *** | Supported |

***: highly statistically significant at p < 0.001; CR: Composite reliability

## 4. Discussion

The current study aimed to investigate the mediating influence of big-data analytics-based knowledge on the relationship between social responsibility (Ethical Behavior, Environmental Sustainability, Social Impact, Stakeholder Engagement, Economic Responsibility, Collaboration and Partnerships) and social entrepreneurship within telecommunications organizations in Jordan through the fiscal year 2023-2024. The study adopted the quantitative methodology through distributing a self-administered questionnaire to a sample of 150 managers of all levels within Jordanian telecommunications companies. Depending on the AMOS program, and through using reliability test, factor analysis, and path analysis results of the study indicated that social responsibility and social entrepreneurship converge in organizations that adopt strategic foundations based on innovation in all practices and decisions. Such results came in agreement with Hammerström et al. (2019) and Ciampi et al. (2021), who noted that it is natural for organizations that adopt smart systems and advanced technology to be faced with a huge amount of flowing data, the source of which is a constant connection to the Internet. When looking at the nature of the data flowing to the organization, we find that the amount of this data is huge, and its nature is confusing and unclear. The organization

may believe that this data is not important due to its apparent confusion and irregularity. In the event of relying on big data analytics systems, the organization will be able to generate knowledge based on big data analytics and thus benefit from all existing information and employ it for the benefit of the organization. Hence, based on the results presented above, it can be said that the study achieved the primary goal, and it became clear that knowledge based on big data analysis mediates the relationship between social responsibility and social entrepreneurship.

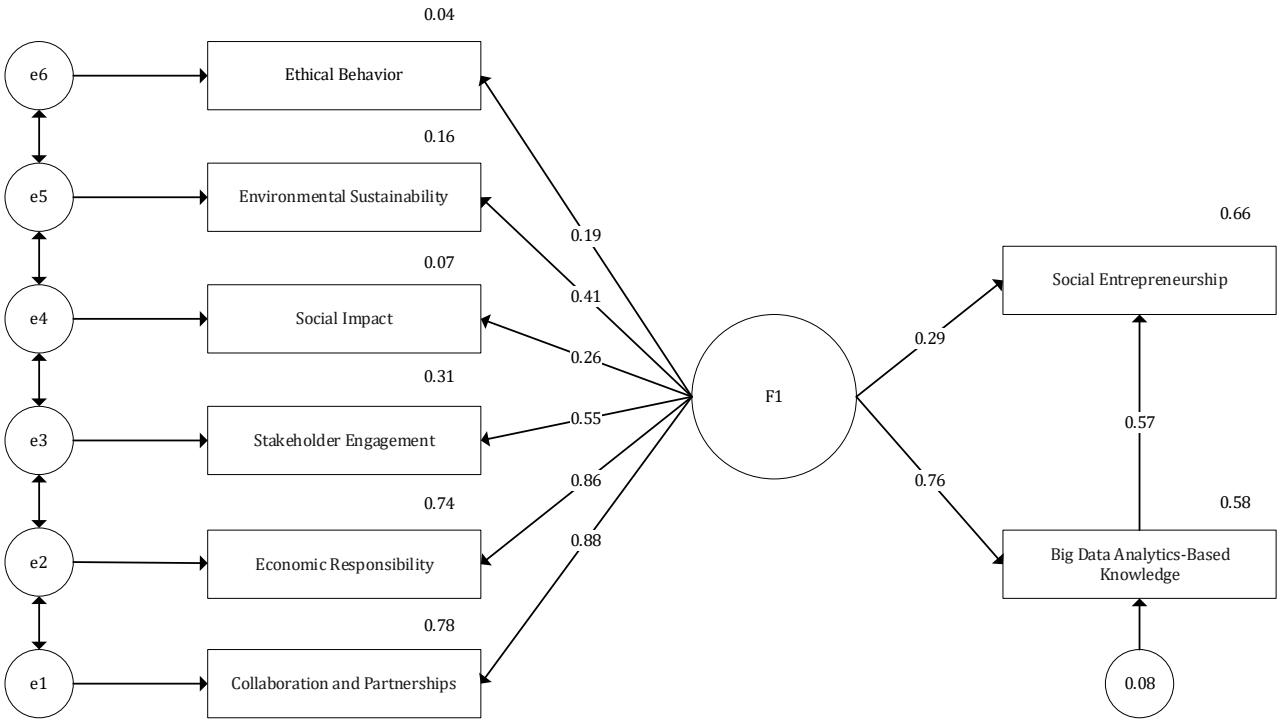


**Fig. 2:** Model results

Using BDA allows organizations to obtain deeper insights, enhance decision-making, and better direct their efforts to meet societal needs. For example, in the healthcare sector, BDA can be used to process large volumes of medical data to identify patterns, predict health risks, and determine effective ways to deliver healthcare services, especially to underserved populations. By applying BDA, healthcare-focused social enterprises can improve their performance, enhance patient outcomes, and make data-driven decisions.

From an environmental sustainability perspective, BDA can support socially oriented businesses by providing information on energy consumption, waste generation, and carbon emissions. This helps organizations use resources more efficiently and adopt environmentally responsible practices. For instance, renewable energy social enterprises can use BDA to optimize energy production, forecast demand, and improve the performance of clean energy solutions, thereby contributing to a more sustainable business environment. BDA also enables social enterprises to monitor their environmental impact and report performance outcomes to stakeholders and investors, ensuring accountability and compliance with sustainability requirements.

Overall, by using BDA to generate meaningful insights, social enterprises can strengthen their social responsibility outcomes, support innovation, and increase their positive impact on society in a more effective and efficient manner. Among the chosen sub-variables that were employed within the context of social responsibility (ethical behavior, environmental sustainability, social impact, stakeholder engagement, economic responsibility, collaboration, and partnerships), it was seen that all variables appeared to be influential in terms of the relationship between social responsibility and social entrepreneurship. In other words, all the adopted sub-variables of social responsibility appeared to be influential on social entrepreneurship. In that sense, we can say here that following an ethical behavior through environmental responsibility within the organizational practices can facilitate a better enhancement in its entrepreneurial orientation. This was agreed on by Wang et al. (2020), who noted that adopting ethics and environmental awareness in social responsibility exposes entrepreneurs as accountable in their actions, in addition to increasing trust built between stakeholders through solid foundations for their initiatives.

The study also showed that using big data analytics to connect social responsibility with social entrepreneurship strengthens stakeholder engagement. Real-time data provide stakeholders with an accurate picture of current conditions and clarify the implications of organizational practices. This finding aligns with the conclusions of Zhu et al. (2022) and Dubey et al. (2020), who stated that big data analytics encourages organizations to become more socially involved by supporting the

engagement of both internal and external stakeholders.

Furthermore, the study found that relying on insights generated from big data analytics increases the social impact of organizational social responsibility through collaboration with private and governmental partners. Such partnerships enhance the effectiveness of organizational efforts when all parties pursue the shared goal of promoting societal well-being. These results are consistent with Wang et al. (2020), who emphasized that internal and external partnerships can help organizations achieve their social objectives with stronger outcomes and greater influence.

## 5. Conclusion and implications

The study confirmed that social responsibility is not only an ethical commitment but also a contributor to organizational success and sustainability. It strengthens entrepreneurial orientations that improve societal acceptance of the organization. In this sense, social responsibility extends beyond written policies or unspoken intentions held by employees or stakeholders.

The connection between social responsibility and social entrepreneurship must be based on clear and reliable foundations that guide organizational actions toward desired outcomes. Modern technological systems—such as big data analytics, machine learning, and natural language processing—provide these foundations. These technologies help organizations fulfill their social responsibilities, enhance their reputation, build trust with stakeholders, attract and retain employees and customers, and contribute to public well-being.

The study offers both theoretical and practical value. Theoretically, it enriches existing knowledge by linking social entrepreneurship with big data analytics and relating both to social responsibility, highlighting social responsibility as a driver of social entrepreneurial behavior. Practically, it provides guidance for organizations, especially telecommunications companies, on how to effectively use big data analytics–based knowledge to enhance their social responsibility and social entrepreneurship efforts. The findings suggest that knowledge derived from big data enables organizations to develop targeted initiatives that align with social responsibility goals and maximize social impact within the Jordanian telecommunications sector.

Knowledge management, mediated through big data analytics, supports organizations in making informed decisions based on ethical, environmental, and social objectives. Big data allows social enterprises to collect, interpret, and understand large datasets related to operations, stakeholder needs, and societal impact. This increases transparency, accountability, and the ability to evaluate and improve social responsibility practices. By using big data–driven knowledge, social entrepreneurs can identify areas for improvement, assess their progress toward social goals, and ensure that their initiatives create meaningful positive impact.

In addition, knowledge management supported by big data analytics promotes innovation and collaboration in social entrepreneurship. Social enterprises can use data on stakeholder engagement, financial sustainability, and partnership opportunities to identify synergies, form collaborations, and pursue collective actions that advance their social mission. This knowledge-based approach improves efficiency, visibility, and continuous development. By using big data to inform decision-making and enhance knowledge management, social entrepreneurs can address complex social challenges, adapt to changing conditions, and develop sustainable and socially responsible solutions.

This study, however, is subject to certain limitations. It was conducted only within the telecommunications sector in Jordan, which limits the generalizability of the findings to other industries or countries with different organizational structures, cultures, and regulatory environments. The sample included 150 managers, and although the insights are valuable, the sample size may be considered modest for broader generalization, and the views of these managers may not fully represent all perspectives within their organizations. Furthermore, data collection through self-administered questionnaires may have introduced response bias, as participants might have provided socially desirable responses or misinterpreted some questions, potentially affecting the accuracy and reliability of the results.

## List of abbreviations

| | |
|---|---|
| AGFI | Adjusted goodness-of-fit index |
| AMOS | Analysis of moment structures |
| AVE | Average variance extracted |
| BDA | Big data analytics |
| CFI | Comparative fit index |
| CR | Composite reliability |
| CSR | Corporate social responsibility |
| GFI | Goodness-of-fit index |
| PCA | Principal component analysis |
| RBV | Resource-based view |
| RMSEA | Root mean square error of approximation |
| SE | Social entrepreneurship |
| SPSS | Statistical package for social sciences |
| VIF | Variance inflation factor |

## Compliance with ethical standards

### Ethical considerations

This study was conducted in accordance with the ethical standards of research involving human participants. Participation was voluntary, and informed consent was obtained from all respondents. No identifying personal data were collected, and confidentiality and anonymity were assured throughout the study.

## Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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