**The Role of Green Innovation in Improving the Insurance Service in the Health Insurance Sector in Saudi Arabia: An Applied Study on Health Insurance Companies in Jeddah**

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**Abstract:**

Green innovation has been internationally adopted to by insurance companies to enhance their financial sustainability and reputation. **Aims**: This study aims to examine the association between the green innovation and quality of services at insurance company in Jeddah, Saudi Arabia. **Method**: a cross-sectional, analytic, design was employed using online questionnaires targeting beneficiaries from Bupa Arabia and Tawuniya health insurance companies. The study used mean and SD as a descriptive statistics with the spearman coefficient and linear regression to measure the association between green innovation and health services quality domains. **Results**: a number of 390 participants responded to the study questionnaire. The study showed high mean scores in both domains green innovation and quality of insurance services ranging from (3.54 – 4.03, and 3.72 – 3.97) consecutively. Also, the study revealed a positive significant correlation between the green innovation such domains (green products innovation, green process innovation, and organizational innovation) and quality of insurance service. **Recommendation**: similar study needs to be replicated in different location targeting different companies. Moreover, future studies might be focused on exploring more green innovation variable that might enhance the quality of health insurance services.

**Keywords:** Green innovation, green product innovation, green process innovation, organizational innovation, health insurance, and quality of services,

1. **Introduction:**

Green innovation is of great importance to companies, as it contributes to increased profits and the opening of new or emerging markets. The implementation of this strategy has the potential to attract investment, thereby increasing productivity. Furthermore, it can leverage modern technologies in a manner that is both environmentally responsible and compliant with relevant regulations and considerations. This is therefore pivotal to enhancing competitiveness in a world that is increasingly concerned about the environment (Kwash, 2021).

Numerous countries worldwide have expeditiously adopted environmental objectives, legislated accordingly, and implemented requisite measures to preserve the environment. Furthermore, they have mandated that organizations, which are the primary cause of environmental problems on a global scale, must address environmental issues, address environmental concerns, adopt green initiatives in their operations, and adopt a green approach (Al-Jamal, 2020). This has resulted in the emergence of the concept of organizational sustainability, encompassing issues of social responsibility and the integration of economic activities with the natural and social environment. It is submitted that one of the most significant strategies for achieving this integration is green innovation.

The green innovation is defined by Rong et al. (2014) as the process of developing and implementing new products and processes to achieve social goals and reduce environmental damage across the entire manufacturing process and product life cycle. Huang & Li (2018) explained that green innovation is used to describe the competitive performance of green products or processes, achieved by reducing the company's environmental impacts. Companies can reduce production costs and increase economic efficiency by implementing environmental-related innovations, such as reducing energy consumption, reusing materials, and redefining the production process. Green innovation also improves companies' reputation and image with customers.

The impact of green innovation on improving services is increasingly recognized by health insurers. The study focuses on three main dimensions of green innovation Green product innovation: This involves the creation of green insurance products that meet the growing demand for sustainable options. Insurance companies can develop products that incentivize the adoption of green health practices. This can attract environmentally conscious customers and enhance their reputation, Green process innovation: This involves implementing sustainable practices in operational processes to reduce the environmental footprint. Examples include using digital technology to streamline claims processing, minimizing paper used and using renewable energy. These innovations not only improve operational efficiency but also reduce costs and promote environmental sustainability. Organizational innovation: This dimension emphasis’s the promotion of a sustainable culture within health insurance companies. This includes the training of employees in green practices, the alignment of corporate strategies with sustainability goals, and the promotion of partnerships that advance sustainability. Such cultural and structural changes can increase employee engagement and align company goals with stakeholder expectations. By integrating these dimensions, health insurance companies can not only improve the quality of their services, but also address environmental concerns and ultimately gain a competitive advantage in the marketplace, while at the same time meeting regulatory requirements and improving customer satisfaction.

Green innovation has been viewed as a driver of economic progress in recent years, during which, thanks to growing environmental challenges, there has been a surge of interest, and rapid development, in environmental matters (Sánchez-Sellero & Bataineh, 2022). In addition, various environmental awareness forums, including the Paris 2015 Agreement, have emphasized the necessity for individuals and businesses to reduce their environmental impacts (García-Marco, Zouaghi & Sánchez, 2020). Green innovation is a pivotal strategic accelerator for achieving sustainable development, incorporating technological innovation in energy conservation, the avoidance of pollution, and waste recycling (El-Kassar & Singh, 2019). This approach has been demonstrated to enhance the efficiency of resource utilization, reduce financial expenditure, and contribute to environmental conservation (Su et al., 2020). This approach is predicated on the premise that it engenders a mutually beneficial outcome, given that it serves to ameliorate the contradictions that have heretofore existed between the rapid economic expansion and environmental considerations (Song, Wang, & Ma, 2020).

1. **Literature Review**

Bataineh (2024) a substantial corpus of literature has emerged in recent years exploring the connections between organizational and green innovation. In this study, the ability of firms to refine their organizational practices in accordance with external developments has been considered, particularly in the context of the introduction of updated environmental regulations and advanced technologies, with the aim of surviving and competing globally. The present study postulated that organizational innovation was one of the primary drivers of green innovation at the level of the firm. The objective of the present study was to investigate the impact of organizational structures on green innovation in business contexts, particularly in the context of the adaptation of businesses' environmental strategies in alignment with organizational structures. Furthermore, the study sought to ascertain whether there existed significant disparities in the realm of green innovation between firms operating within the clean and dirty sectors. In order to address the aforementioned main points, a two-step regression was run using the generalized method of moments (GMM) on data relating to organizational innovation factors and green innovation constructs at the level of the firm. The principal findings confirm that the organizational innovation variables studied did in fact promote green innovation and that dirty sector firms were more likely to undertake green innovations than those in the cleaner sectors.

As demonstrated by Susheela et al. (2021), the significance of service quality in the context of business retention and acquisition within service sectors is well-documented. It is imperative to acknowledge that, given the nature of the insurance industry as a service industry, the quality of service provided to customers assumes significant importance. In the present context of a highly complex business environment, it is imperative to maintain high-quality service, irrespective of extraneous circumstances. The insurance sector is not an exception to the above rule. The present study makes a simple attempt to compare service quality in both the public and private sectors. In order to estimate service quality, a range of parameters have been considered. These include reliability, confidentiality, accuracy, the receptiveness to customer complaints, the speed of complaint resolution and the receptiveness to customer suggestions. Furthermore, an evaluation of the degree of innovation in products and services was conducted.

Empirical results (Soewarno, 2019) show that a green innovation strategy positively influences green innovation. This study also demonstrates that a green innovation strategy positively influences green innovation indirectly through green organizational identity and environmental organizational legitimacy in manufacturing firms in Indonesia, a developing country. It is suggested that firms should develop a green innovation strategy, which should be reflected in a green organizational identity to gain environmental organizational legitimacy.

Hu et al. (2023) showed that the impact of green insurance on green innovation, based on company data from 2008 to 2020, showed that green insurance has become more widespread and green companies’ applications have increased significantly. The research concluded that there is a positive relationship between green insurance and green innovation, in that green insurance provides more funding sources and bears greater risks. The research also showed that green insurance improves environmental performance by promoting green innovation.

A study by Johri (2009) examined customer satisfaction in the general insurance market. Customer satisfaction was positively correlated with claims settlement. A study by Negi (2009) shows that customer satisfaction is closely linked to the qualities of a company's employees: trustworthiness and empathy. When it comes to customer satisfaction, it's important to know which aspects of a service have the most impact on the customer's overall satisfaction.

Kheng et al. (2010) reported that reliability had no effect on customer satisfaction in Malaysia. Customer satisfaction in the Syrian mobile telecommunications industry is positively influenced by service quality characteristics such as responsibility and network quality. Nebo and Gerald's (2016) survey research sought to ascertain the influence of customer satisfaction strategies on the performance of selected insurance companies in the Enugu metropolitan area. The study revealed that ten of the fifteen customer satisfaction tactics analyzed were the most frequently employed. The report advises managers to focus on seven methods that have a significant impact on customer satisfaction while reducing spending on factors that are not so critical.

Gachau's (2016) study examined customer satisfaction and the quality of insurance service delivery in Kenya. The primary objective of the study was to ascertain the extent of customer satisfaction and the quality of insurance services in Kenya. The study's issue statement was grounded in the theoretical framework of dissonance theory, with a focus on the concept of consumer satisfaction. The level of evaluation of the quality of Actual insurance service perceived by the customers of the United Insurance Company is high, and Therefore there is a high quality provided by the company to its customers. Increased attention to the quality of services provided by the company to its customers to maintain their loyalty, which was concluded by their understanding of the quality of its services Fahmy (2021).

Angie and Murad (2023) Measuring the Impact of Electronic Insurance Service Quality on Saudi Insurance Companies. Measuring the Precise and Inaccurate Influence of Electronic Insurance Quality Dimensions and the Degree of Customer Loyalty to Insurance Companies for Insurance Services on Saudi Insurance Companies through the variables of customer demand for the insurance positioning system and the degree of customer loyalty to insurance companies. There is a significant positive effect of the precise quality dimensions of electronic justice services on the extent of customer demand for the insurance company's website. There is a significant difference between insurance establishments in the form of differences between the overall insurance service quality (company - speed of electronic transactions, security, suitability, and website content quality) and insurance company subscriptions.

Despite that many previous studies discussed the concept of corporate green innovation, but the concept of (green product innovation, green process innovation, and organizational innovation) still not yet studies. Moreover, no study found in the literature that focused on measuring these concepts in the context of health insurance. Therefore, in this study it has been focused on the impact of green innovation (green product innovation, green process innovation, and organizational innovation) on improving the insurance service in the health insurance sector in the Kingdom of Saudi Arabia.

**Research Questions:**

1. What is the association level between green innovation and improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia from the perspective of beneficiaries.

**Research Objectives:**

1. To examine the association between green innovation and improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia from the perspective of beneficiaries.

**Research Hypotheses:**

**Main Hypothesis of the Research:**

There is no significant association of the dimensions of green innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

Deriving from this main hypothesis are the following sub-hypotheses:

**Sub-Hypothesis One:**

There is no statistically significant association of green product innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

**Sub-Hypothesis Two:**

There is no statistically significant association of green process innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

**Sub-Hypothesis Three:**

There is no statistically significant association of organizational innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

**Methods:**

**Study design:**

The current study was conducted using a cross-sectional, analytical, design. Beneficiaries who are registering either in Bupa Arabia and Tawuniya health insurance companies in Jeddah city, Saudi Arabia, during the period of the study are included. According to the Raosoft website ([www.raosoft.com](http://www.raosoft.com)), as a tool for sample size calculation, a number of 385 respondents was required.

The study used an online questionnaire. It was developed by the research team based on the literature review. It consists of 33 items constituting three parts which are (1) demographic information, (2) green innovation, and (3) insurance services quality. The first draft of the questionnaire was submitted for a content validity by both academician and experts in the field. Then, it has been undergone for reliability testing using a Cronbach’s alpha coefficient.

**Data collection:**

After obtaining the Institutional Review Board (IRB) approval form the branch of Ministry of Health in Jeddah, the data collection phase was commenced from March – April 2025. The list of beneficiaries was polled out using the MOH Jeddah branch’ database. Where online questionnaires have been emailed to population including full details about the study scope and objectives.

**Reliability:**

The reliability of all items related to the two dimensions of green innovation and insurance service quality are shown in Table 1. The overall Cronbach’s Alpha values is 0.957 indicating a high internal consistency.

Table 1: Cronbach’s alpha for the questionnaire domains and variables

|  |  |  |
| --- | --- | --- |
| Dimension | Items | Cronbach`s α |
| Green innovation | Green Product Innovation | 0.906 |
| Green Process Innovation | 0.888 |
| Organizational Innovation | 0.836 |
| Sub-total items | 0.923 |
| Insurance service quality | Reliability | 0.877 |
| Responsiveness | 0.771 |
| Safety | 0.939 |
| Tangibility | 0.758 |
| Empathy | 0.690 |
| Sub-total items | 0.951 |
|  | Overall | 0.957 |

**Data analysis:**

The Statistical Package for Social Sciences (SPSS) version 25 was used to analysis the collected data. The mean, frequency, and standard deviation (SD) were used for descriptive statistics. While the spearman coefficient and linear regression were used for the inferential statistics.

1. **Results:**

**Demographic information:**

Out of the 390 respondents, the majority were male with n=293(75.1%). A number of 227 (58.2%) was for the range age group (20-39) years old. Most of the participants held a bachelor's degree (60.3%), followed by a master's degree (24.6%). In terms of the insurance company, a number of 232(59.5%) of participants had belonged to the Tawuniya Insurance Company, and n=158(40.5%) were from Bupa Arabia (Table 2).

Table 2: Sample distribution by demographic variables (n=390)

|  |  |
| --- | --- |
| Variables | Frequency (%) |
| Gender |  |
| Male | 293(75.1%) |
| Female | 97(24.9%) |
| Age group |  |
| 20-39 years | 227(58.2%) |
| 40-54 years | 144(36.9%) |
| 55-69 years | 19(4.9%) |
| Education level |  |
| Secondary School | 36(9.2%) |
| Bachelor | 235(60.3%) |
| Master | 96(24.6%) |
| Doctorate | 23(5.9%) |
| Company name |  |
| Bupa Arabia | 158(40.5%) |
| Tawuniya insurance company | 232(59.5%) |

**Measurement scale of all sub-dimensions of green innovation:**

Table 3 shows the descriptive statistics of green innovation sub-dimensions reveal. Mean scores of all items ranging from 3.54 to 4.03. The highest mean in green product innovation for (The company's management emphasizes the production of environmentally friendly green products). Green process innovation had a mean between 3.54-3.93 reflecting a consistent focus on provide innovative designs for its operations to achieve environmental conservation, though the lowest agreement was on green practices potentially reducing profit margins. Organizational innovation had the highest overall score on important, multi-functional activity that achieves development in the work system, and the lowest agreement was that the company conducts training programs for its employees regarding green innovation.

**Table 3: Measurement scale of all sub-dimensions of green innovation**

|  |  |  |
| --- | --- | --- |
|  | Items | Mean (SD) |
| Green Product Innovation | The company's management emphasizes the production of environmentally friendly green products. | 3.81(0.829) |
| The company focuses on ensuring the proper and safe use of its customers by adopting green production. | 3.72(0.797) |
| The company considers the environment to be an important factor in achieving competitive advantage. | 3.78(0.769) |
| The company seeks to develop its products to meet customer needs and desires without harming the environment. | 3.73(0.945) |
| Green Process Innovation | The company applies international standards related to green operations. | 3.77(0.883) |
| The company has the ability to continuously provide innovative designs for its operations to achieve environmental conservation. | 3.93(0.699) |
| The company follows a green operations approach, even if it results in a reduction in profit margin. | 3.54(0.828) |
| The company is committed to fulfilling its ethical obligations towards society through green operations. | 3.69(0.757) |
| Organizational Innovation | The company considers organizational innovation an important, multi-functional activity that achieves development in the work system. | 4.03(0.661) |
| The company encourages employees to solve problems and generate ideas. | 3.80(0.953) |
| The company is committed to the process of organizing the workplace to improve performance. | 3.78(0.910) |
| The company conducts training programs for its employees regarding green innovation. | 3.57(1.042) |
| The company cooperates with government agencies and institutions in the field of environmental conservation. | 3.93(0.969) |

Table 4: Measurement scale of all sub-dimensions of Quality of Insurance Service

|  |  |  |
| --- | --- | --- |
|  | Items | Mean (SD ) |
| Reliability | The company is committed to providing its services to beneficiaries in a timely manner. | 3.79(0.820) |
| The company is keen to provide insurance services correctly the first time. | 3.68(0.816) |
| The company pays special attention to beneficiaries' problems and inquiries. | 3.72(0.729) |
| The company enjoys the trust and appreciation of beneficiaries for its insurance services. | 3.85(0.718) |
| Responsiveness | The company accurately informs beneficiaries of the service delivery dates. | 3.72(1.056) |
| The company provides assistance to beneficiaries when needed. | 3.83(0.940) |
| The company responds promptly to beneficiary inquiries and complaints. | 3.73(1.034) |
| The company's employees are always willing to cooperate with beneficiaries. | 3.97(0.414) |
| Safety | Beneficiaries feel safe when dealing with the company. | 3.76(0.926) |
| The company's employees are polite and treat beneficiaries with courtesy. | 3.75(0.937) |
| The company maintains the confidentiality of beneficiaries' private information. | 3.77(0.910) |
| The company enjoys a good reputation and standing among members of the community. | 3.83(0.918) |
| Tangibility | The company has attractive physical facilities and convenient and sanitary amenities. | 3.46(1.060) |
| The company provides clean, air-conditioned, and adequate waiting rooms. | 3.97(0.533) |
| The company utilizes the latest technology (software) to deliver its services. | 3.69(0.925) |
| The company strives to provide quality and competitive services to its beneficiaries. | 3.90(0.829) |
| Empathy | The company places the interests of its beneficiaries at the forefront of its management and employees' concerns. | 3.84(0.825) |
| The company's working hours are suitable for all beneficiaries. | 3.86(0.619) |
| The company's employees devote sufficient time to caring for their beneficiaries. | 3.88(0.802) |
| The company's employees possess knowledge and understanding of their needs and desires. | 3.99(0.072) |

Table 4 shows the findings in the above table of insurance service quality reveal. in terms of reliability showed high internal consistency (α=0.877) and a mean score between 3.68 and 3.85, which is a mean reliable service performance. Responsiveness had mean scores that were moderately high, from 3.72 to 3.97. The safety dimension means between 3.75 and 3.83, with a high score for the company that enjoys a good reputation and standing among members of the community. Tangibility had slightly more variation, ranging between 3.46 to 3.97, with the highest for the company that provides clean, air-conditioned, and adequate waiting rooms. Empathy dimension has the positively rated for the company's employees who possess knowledge and understanding of their needs and desires.

Table 5: Spearman correlation between green innovation and quality insurance services

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Green Product Innovation | Green Process Innovation | Organizational Innovation | Relaibilty | responsiveness | saftey | Tangibility | Empathy |
| Green Product Innovation |  | 0.749\*\* | 0.426\*\* | 0.347\*\* | 0.520\*\* | 0.545\*\* | 0.470\*\* | 0.601\*\* |
| Green Process Innovation |  |  | 0.625\*\* | 0.346\*\* | 0.393\*\* | 0.490\*\* | 0.499\*\* | 0.631\*\* |
| Organizational Innovation |  |  |  | 0.378\*\* | 0.424\*\* | 0.384\*\* | 0.375\*\* | 0.507\*\* |

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

Table 5 shows the Spearman correlation analysis was used to relationship between green innovation and the quality of insurance services. Among the three dimensions of green innovation, **Green Product Innovation** showed strong associations with all service quality aspects, particularly with **empathy (r = 0.601)** and **safety (r = 0.545), Green Process Innovation** also demonstrated moderate to strong correlations, with the highest link to **empathy (r = 0.631)** and solid associations with **safety** and **tangibility. In terms of organizational innovation strongest correlation is with empathy 0.507.**

Table 6: Spearman correlation between green innovation and quality insurance services

|  |  |  |
| --- | --- | --- |
|  |  | Quality of Insurance services |
| Green innovation | Correlation coefficient | 0.507\*\* |
|  | p-value | 0.00 |

Table 6 shows the Spearman correlation coefficient between green innovation and the quality of insurance services is 0.507, indicating a moderate positive correlation, the p-value is less than 0.01, which means the correlation is statistically significant at 0.01 level.

**Hypothesis analysis:**

**Sub-Hypothesis One:**

There is no statistically significant effect at the significance level of (0.05) of green product innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

By using linear regression, the table below shows the results to determine which factor has a statistically significant effect of green product innovation on improving insurance services

Table 7: linear regression between the green product on improving insurance services

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B | Std. Error | t | Sig | R |  |
| Constant | 38.739 | 2.642 | 14.664 | 0.00 |  |  |
| Green Product innovation | 2.732 | 0.212 | 12.903 | 0.00 | 0.548 | .300 |

Table 7 shows there is a statistically significant effect of green product innovation on improving the insurance services in the health insurance sector, p-value=0.00 is less than 0.05.

B=2.732, which means that for each unit increase in green product innovation, insurance service quality increases by 2.732 units.

R=0.548 is a moderate correlation, 30% of the variance in insurance service quality can be explained by green product innovation.

**Sub-Hypothesis Two:**

There is no statistically significant effect at the significance level of (0.05) of green process innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

Table 8: linear regression between the green process on improving insurance services

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B | Std.Error | t | Sig | R |  |
| Constant | 43.408 | 2.871 | 15.120 | 0.00 | 0.460 | 0.210 |
| Green Process innovation | 2.367 | 0.232 | 10.207 | 0.00 |  |  |

Table 8 shows there is a statistically significant positive effect of green process innovation on improving insurance services in the health insurance sector in Saudi Arabia, with a p-value of 0.00. The coefficient B=2.367, the model explains 21% of the variance in insurance service quality, .

**Sub-Hypothesis Three:**

There is no statistically significant effect at the significance level of (0.05) of organizational innovation on improving insurance services in the health insurance sector in the Kingdom of Saudi Arabia.

Table 9: linear regression between organizational innovation on improving insurance services

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | B | Std. Error | t | Sig | R |  |
| Constant |  | 45.584 | 2.897 | 15.736 | .000 | 0.429 | 0.184 |
| Organizational innovation |  | 1.664 | .178 | 9.339 | .000 |  |  |

Table 3 shows the organizational innovation has a statistically significant effect on improving insurance services with p-value of 0.00, which is less than 0.05. The regression coefficient (B=1.664) indicates that for each unit increase in organizational innovation, insurance service quality increases by 1.664 units. The model explains 18.4% of the variance in insurance service quality

1. **Discussion:**

Green innovation is a concept that recently adopted in the health insurance context. Despite the potential benefits of adopting the green innovation, no study found that measured the impact of green innovation and quality of insurance services. This study aimed to assess the association between green innovation (green product innovation, green process innovation, and organizational innovation) and the health insurance quality (reliability, responsiveness, safety, tangibility, and empathy) in Jeddah, Saudi Arabia. Therefore, this is considered the first study measuring these two domains locally and internationally. Consequently, few related studies that might be appropriate for the comparison and discussion.

The current study revealed high mean scores among all variables in the green innovation domain ranging from 3.54 to 4.03. Having such results indicate an organizational interest in green concept its promising advantages on both company and customer level. Moreover, the Kingdon of Saudi Arabia encourages different public and private institutions to links their objective to the strategic goals at the Vision 2023. This result is supported by the study of Bataineh (2024) that showed a positive impact for the innovation on the overall performance of organizations. Where the study of Soewarno (2019) highly recommends firms at different sectors to adopt green strategies to enhance the green innovation and their performance. Absolutely, such strategies can be implementing in the health insurance context as well.

Moreover, the quality of insurance services was positively perceived by beneficiaries. Where the study showed high mean scores ranging from 3.73 to 3.97. This result revealed a good quality of insurance services provided by both Bupa Arabia and Tawyunia companies. It might be influenced by the rules and regulations of Saudi Health Insurance Council (CHI) and its close monitoring and evaluation to the performance of insurance companies in Saudi Arabia. The study of Susheela et al. (2021) asserts the importance of improving the quality of services to ensure the business sustainability and competition. Furthermore, they used some parameters similar to what the current study has such are reliability and responsiveness. While the study Gachau's (2016) showed positive relationship between the beneficiaries and quality of health insurance services. Therefore, in order to reach better insured satisfaction, health insurance companies have to constantly focus on improving the quality of services delivered.

Findings of this study showed a positive correlation between the three sub-domains (green product innovation, green process innovation, and organizational innovation) on the quality of insurance services domain. This result was expected, especially in a developing country such as the Kingdom of Saudi Arabia, where the context of health insurance is promising and the competition is there. The study of Kheng et al. (2010) and Gachau's (2016) showed positive relationship between quality of health insurance and different factors such as green concept and customer satisfaction.

The current study has some strength points that enhances its rigorous. First, the study targeted participants of the biggest health insurance companies in Saudi Arabia which are Bupa Arabia and Tawuniya. Second, the study involved approximately an equal number of participants. Finally, the employment of correlation and regression tests strengthen the correlation between the green innovation and insurance services quality. However, having only beneficiaries from Jeddah city might limits the generalizability of findings across the Kingdom.

Findings of the study provide insight and valuable information on the real impact for the green innovation in the context of health insurance in Saudi Arabia. These will support policymakers, health insurers, and investors in the field of health insurance to foster green innovation concepts across all products, processes, and services. Additionally, it open new window for business sustainability in the health insurance sector in Saudi Arabia.

1. **Recommendations:**

While the concept of green innovation is new in the health insurance sector, it is crucial to explore more variables on green innovation that enhance the quality of insurance services. As this study conducted in Jeddah city, it is highly recommended to replicate the study at different locations targeting different companies. Moreover, future studies might focus on measuring the features of health insurance in Saudi Arabia compared to similar country.

1. **References**
2. Johri, G. (2009), Customer satisfaction in general insurance industry. A Journal of Risk and Insurance, Vol IV
3. Johri, G. (2009), Customer satisfaction in general insurance industry. A Journal of Risk and Insurance, Vol IV.
4. Kheng, T., Mahamad, H., & Ramayah, P. (2010). Relationships between employee attitudes, customer satisfaction and departmental performance. Journal of Management Development, 15(1), 62-75.
5. Gachau, J. (2016). Customer satisfaction and insurance service quality delivery in Kenya. Being a project submitted in partial fulfilment of the requirement for the award of the degree of masters of business administration, school of business, University of Nairobi.
6. Susheela Devi B Devaru, et. al.. (2021). Study on Service Quality of Insurance Companies -A comparative study. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(11), 284–291. <https://doi.org/10.17762/turcomat.v12i11.5871>
7. Ahmad I., Shah F.A., Kakakhel S.J. (2022)The effect of green innovation on corporate sustainability in the seed and pesticide multinational companies working in Pakistan. J. Manag. Sci. 2022;16:119–143. <https://journals.qurtuba.edu.pk/ojs/index.php/jms/article/view/647>
8. Lu B., Fan W., Zhou M. (2015) Social presence, trust, and social commerce purchase intention: an empirical research. Comput. Hum. Behav. 2016;56:225–237. doi: 10.1016/j.chb.2015.11.057.
9. P. Sánchez-Sellero, M.J. Bataineh(2022) : How R&D cooperation, R&D expenditures, public funds and R&D intensity affect green innovation? Technology Analysis & Strategic Management, 34 (9) (2022), pp. 1095-1108
10. A.N. El-Kassar, S.K. SinghGreen (2019) “innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices ,Technological Forecasting and Social Change, 144 (2019), pp. 483-498
11. T. García‐Marco, F. Zouaghi, M. Sánchez : (2020) Do firms with different levels of environmental regulatory pressure behave differently regarding complementarity among innovation practices? ,Business Strategy and the Environment, 29 (4) (2020), pp. 1684-1694.
12. W. Song, G.Z. Wang, X. Ma : ( 2020) Environmental innovation practices and green product innovation performance: A perspective from organizational climate Sustainable Development, 28 (1) (2020), pp. 224-234.
13. X. Su, A. Xu, W. Lin, Y. Chen, S. Liu, W. Xu (2020) : Environmental leadership, green innovation practices, environmental knowledge learning, and firm performance Sage Open, 10 (2) (2020), Article 2158244020922909
14. MJ Bataineh, P Sánchez-Sellero, F Ayad‏ (2024) The role of organizational innovation in the development of green innovations in Spanish firms‏ ,European Management Journal, 2024‏•Elsevier‏
15. Noorlailie Soewarno, Bambang Tjahjadi, Febrina Fithrianti, (2019) "Green innovation strategy and green innovation: The roles of green organizational identity and environmental organizational legitimacy", Management Decision, <https://doi.org/10.1108/MD-05-2018-0563>
16. Jing-Wen Huang, Yong-Hui Li, (2018) "How resource alignment moderates the relationship between environmental innovation strategy and green innovation performance", Journal of Business & Industrial Marketing, Vol. 33 Issue: 3, pp.316-324.-
17. Ru-Jen Lin Rong-Huei Chen Fei-Hsin Huang , (2014),"Green innovation in the automobile industry", Industrial Management & Data Systems, Vol. 114 Iss 6 pp. 888-889.
18. Qasim Fahmy, (2021) Measuring the Service Quality of Insurance Companies Operating in Yemen, from the Customer Perspective Using the "SERVPERF" Actual Performance Model: An Empirical Study of the United Insurance Company, Namaa Journal of Economics and Trade, Volume 5, Issue 2.
19. Yucai Hu, Shaorui Du, Yukun Wang and Xinya Yang, )2023,( How Does Green Insurance Affect Green Innovation? Evidence from China, MDPI, Sustainability 2023, 15, 12194. <https://doi.org/10.3390/su151612194>.
20. Mustafa Maher Mohamed El Gamal (2020). Green Human Resources Management and its Benefit in Light of the Coronavirus Crisis. Faculty of Commerce, Tanta University, Arab Republic of Egypt.

Zahia, Kawash. (2021), The importance of green innovation in the transition towards a circular economy to protect the environment and achieve sustainable development - a case study of Natura Co