

Influence of Biostatistical Literacy, Perceptions of Biostatistics knowledge and Training, and Big Data Analytics Capability on Environmental Behavior: The Mediating Role of Environmental Awareness

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ABSTRACT

Purpose: Environmentally friendly practices should be adopted by employees because of environmental degradation at the global level. It is important for organizations to identify factors that can create awareness among employees regarding environment and develop pro-environment behavior among them. Therefore, the purpose of this study was to analyze the influence of big data analytical capability, employee biostatistical literacy, employee perceptions of biostatistics knowledge and training, and environmental awareness on employee environmental behavior. This research aimed to examine mediating effects of environmental awareness. **Design/ method/ approach:** Quantitative research methodology was used in this research. Employees were the population of the study. Self-administered survey design was used to gather responses from the employees. A questionnaire with 7-point Likert was adopted to develop questionnaire. 168 usable questionnaires were received which were used for analysis through Smart PLS 4. Simple random sampling technique was used to collect data from employees. **Findings:** Results demonstrated that big data analytical capability, employee biostatistical literacy, and employee perception of biostatistics knowledge and training have positive effect on environmental behavior. Effect of environmental awareness on environmental behavior was statistically supported. Mediating role of environmental awareness was also confirmed. **Originality:** This study is among few ones that has discussed biostatistical literacy as exogenous variable.

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1. Introduction

Ecology regulators, analysts, biostatisticians, and researchers at the global level have concurred that natural resources, biodiversity, and environment are degrading since last few decades. Humans play an important role in this degradation (Bangwal et al., 2025). Whereas a number of organizations are focusing towards sustainable and green goals. The employees of organizations must show pro-environmental behavior to obtain green competitive advantage. It is because environmental behavior is one of the important factors of sustainable development. Presently, some organizations do not give importance to environmental sustainability, whereas it is one of the critical responsibilities of organizations that they must embrace. In fact, pro-environmental behavior reflects the environmental behavior of the employees. There are a number of foundational reasons for which employees should be motivated by the organizations for pro-environmental behavior. Therefore, organizations should invest in awareness programs for employees to create environmental awareness. Such awareness programs will help employees to keep their daily operations environmentally friendly (Nawaz et al., 2026). To initiate environmentally friendly programs at the workplace, organizations should begin with simple actions of employees, build engagement among employees, and set positive culture in organization (Yang et al., 2026).

In order to promote sustainable practices within an organization, employee environmental behavior plays a very important role. Pro-environmental behavior can be created by encouraging employees to use resources in a way that the environment is impacted at a minimal level. Furthermore, employee environmental behavior contributes significantly to achieve organizational goals of sustainability, because it develops a culture of long term commitment toward ecology and

environmental responsibility (Miah et al., 2025). The world is facing one of the major environmental challenges in the form of environmental damage occurring at the level of society, institution, and individual. One of the main reasons for environmental degradation is unconscious behavior of humans. This environmental damage is one of the serious threats to humans as well as other habitats. All types of industries are facing problems in their operations because of this human-induced environmental problem. Management of environment is possible by creating awareness and altering employee behavior to support environment (Darvishmotevali & Altinay, 2022). Employees must be aware of the environmental policies and the role of the employees to integrate these policies in employees actions (Bhatti et al., 2026; Farooq et al., 2026). In fact, in some industries it must be an obligation for employees to follow environmentally friendly practices. Understanding of the employees regarding environmental issues is one of the factors that can create positive environmental behavior.

This is the era of digitalization where biostatistical literacy has become very important for employees (Bhatti et al., 2018). Most of the studies in the past have discussed the importance and role of biostatistical literacy in their studies. Statistical literacy plays a very important role to enable employees to better understand the data-driven environment in which modern organizations make informed decisions and operate (Mouli & Alam, 2024). Biostatistical literacy is an important contemporary literacy along with other traditional skills such as arithmetic, writing, and reading skills that serve as the foundational capital for employees to perform efficiently at the workplace (Mouli & Alam, 2024). In the context of digital organizations, biostatistical literacy is vital for employees to describe and interpret information that is derived from digital and real-world data sources. Biostatistical literacy shows the ability of employees to communicate, evaluate, and understand statistical data by using different media in a critical manner (Brearley et al., 2023). Additionally, biostatistical literacy enables employees to interpret data accurately, assess research findings critically and make decisions on the basis of evidence in their professional roles.

The way an employee shapes and works on the data within the organization is dependent on the perception of the employee towards biostatistical knowledge and training. When employees perceive such training as relevant and valuable, it is highly likely that employees will engage in using different analytical tools, apply insights to make decisions, and interpret data accurately. Positive perception regarding biostatistical knowledge and training fosters data-driven culture, reduces errors, and helps in handling complex data sets (Sakarna et al., 2025). Perception of knowledge and training encourages employees for continuous learning and adaptability to new technology. Employees also prefer to use different analytical methods to solve biological problems. On the other hand, negative perception of biostatistics knowledge and training may lead to poor decision quality, underutilization of resources, and resistance. Therefore, it is important for organizations to adopt strategies that foster a positive perception of biostatistics knowledge and training so the employees improve their evidence-based practices, organizational efficiency, and individual performance (Ordak, 2024).

Big data analytical capability is important for different organizations that want to use complex and large data sets for strategic advantage (Nilashi et al., 2025). Big data analytics capability enables organizations to analyze, process, and collect vast volumes of unstructured and structured data in real time. It leads to more timely and accurate decision making. Big data analytical capability improves operational efficiency by identifying inefficiencies, trends, and patterns that most of the time remain hidden (Riipa et al., 2025). It provides support for innovation by uncovering market opportunities and customer preferences, allowing firms to develop competitive services and products. Furthermore, it provides strength to risk management by using different predictive insights. As a result, overall performance of the organization improves. By developing a data-driven culture, big data analytical capability empowers employees to sustain long term growth, adapt to dynamic environments, and make informed decisions in an increasingly competitive and digital landscape. Thus, the main purpose of this study is to analyse the effect of big data analytical capability, employee biostatistical literacy, employee perception of biostatistics knowledge and training, and environmental awareness on employee environmental behavior in context of employees working in different organizations.

2. Literature Review

2.1 Employee Environmental Awareness (EEA) and Employee Environmental Behavior

This is the era of sustainability where organizations, employees, customers and all stakeholders are more concerned about environmental issues. Studies in past has discussed environmental behavior as deliberate actions taken the employees with purpose to minimize the negative effect of their actions on the environment (Alherimi et al., 2024). Environmental behavior in literature is discussed as voluntary behavior of a person that later contributes to organizational sustainability. There is multiple range of this behavior ranging from conservation of energy to actions taken by individuals like recycling different objects. Issues like Covid-19 has forced individuals to rethink the alignment between ecological environment and humans. It has also caused individuals to judge the impact of different personal actions on environment. In other words, environmental behavior is important for the future of humanity (Rai et al., 2022).

Creating awareness about environmental issues is one of the most important factors to ensure successful implementation of steps taken by the organization regarding environment. Studies has referred environmental awareness as the level to which a person has knowledge regarding environment and is reflected through human behavior. A number of past studies has environmental awareness of the individual is one of the main motivation factors that compel an individual to act green or adopt green behavior. Studies have acknowledged that employees having higher levels of environmental awareness are likely to act in manner that is environmentally friendly. The first step to solve the issues of environment is to be aware of importance of environmental protection. Employees having higher level of environment awareness are likely to get engage in activities that are suitable for environmental protection and sustainability (Omarova & Jo, 2022). The concentration of environment issues is on 4 Rs namely rethink, recycle, reuse and reduce.

Researchers stated that environmental awareness is a construct that is dependent on multiple factors. Each factor has direct or indirect effect on the green behavior of the individual (Fu et al., 2020). Moreover, lack of awareness among individuals is also one of the reasons why individuals do not follow green behavior. The individuals who are aware of the environmental factors are ready to pay extra for environmentally friendly services (Yuriev et al., 2018). Scholars revealed that environmental awareness among managers significantly impacted their green behavior (Safari et al., 2018). Researchers also found that there is positive association between environmental awareness and environmental behavior. On the basis of above discussion, we hypothesize that

H1: EEA has positive effect on Employee Environmental Behavior.

2.2 Employee Biostatistical Literacy and Employee Environmental Awareness

Environmental awareness among employees is the base of development of skills and competencies among employees that provide support to innovation. Employees who are aware of the issues of environment are likely to contribute to the innovations that will lead to organizational sustainability (Pratiwi et al., 2025). Environmental awareness of employees is recognized as important asset for the organization to gain competitive position. Employees having high level of environmental awareness have ability and competence to address and identify challenges related to environment in proactive manner. Ability of these employees to recognize impact of environment on business operations can help them mitigate risks that are related to sustainability. These employees contribute to the development of sustainability and green initiatives allowing them to adopt practices that are environmental friendly (Bouzari et al., 2022). Therefor environmentally aware employees are valuable and unique resource of the organization that help the organization to be market competitive (Gan & Na-Nan, 2026).

Studies mentioned that biostatistical literacy reflects the ability of the employee to apply, analyze, and interpret data of statistics and biology for the decision making of the organization. This decision making is important in the context of environment (MacFarland, 2024). As a result of such competency in employees, the capacity to understand issues of environment can easily be understood by the employee. Moreover, employee can easily make evidence based judgement and evaluate ecological risks (Olowe et al., 2024). It is very important to enable sustainability on the basis of data strengthen participation of employees in environmental decision of organization and improve problem solving related to environment. In context of organizations, employees having biostatistical literacy have capability to evaluate environmental issues in critical way.

Past studies revealed that there exist relationships between biostatistical literacy in terms of knowledge based analytical capability and environmental awareness. Scholars found that employees knowledge regarding biostatistical knowledge impacts their environmental knowledge that later enhances the environmental awareness of employees (Afsar & Umrani, 2020). Similarly, study also reported employing having knowledge regarding environment as a result of biostatistical literacy have significant effect on environmental awareness. Additionally, the study of Simatupang et al. (2025) reported positive significant effects of statistical literacy as environmental information on environmental awareness.

H2: Employee Biostatistical literacy has positive effect on EEA.

2.3 Employee Perception of Biostatistics Knowledge & Training and Employee Environmental Awareness

Biostatistics is the application of mathematical principles and statistical techniques for scientific research in fields of public health, biology and medicine. It is one of the evidence based and specialized science involving presentation, interpretation and collection of data with purpose to reduce illness and improve health outcomes. Knowledge of biostatistics plays very important role in scientific methods considering the interpretation of data, analysis of data, description of data and organization of data. Knowledge of biostatistics helps specialists to determine the validity of tests, analysis of tests, and interpretation of data. In absence of biostatistical knowledge, a professional will not be able to make accurate judgement (Javali & Sunkad, 2016).

Knowledge regarding environment has significant effect on the environmental behavior of the individual. Biostatistics

knowledge leading to environmental knowledge plays key role in developing environmental awareness. Perceived ecological knowledge shapes the attitude of the individuals regarding reuse of solid waste. On the basis of past findings, it is evident that perceived knowledge has key role to develop pro-environmental behavior among employees (Perea et al., 2025). The availability of environmental knowledge has direct effect on the awareness regarding different harms of linked to waste disposal (Jiang et al., 2025). Exchange of environmental knowledge has significant and positive effect on green behavior of employees working in organizations. Knowledge regarding effects and cause of environmental pollutions develops increase in level of awareness among individuals leading to adoption of behavior that is pro-environmental (Neruja & Arulrajah, 2021). In other words, biostatistics knowledge will lead to the development of environmental knowledge that later form environmental awareness (Candrianto et al., 2023).

Biostatistics knowledge has positive influence on environmental awareness as it enable individual to apply, analyse and interpret environmental data within individuals in effective manner (Burgos-Espinoza et al., 2025). Employees who have strong skills in biostatistics have the ability understand patterns of ecological risks, resource consumption and pollution level that later improves decision making ability of the individual. As a result of this analytical ability, an employee can easily understand the environmental impact of different actions. Empirical studies Watson (2013) revealed that ability to interpret data in the form of biostatistics knowledge has positive effect on environmental awareness. Therefore, biostatistics knowledge plays the role of important driver of environmental awareness. Similar results were reported by Farooq et al. (2026) reported positive effect of biostatistical knowledge on environmental awareness.

H3: Employee Perception of biostatistics knowledge & training has positive effect on EEA.

2.4 Big Data Analytics Capability (BDAC) and Employee Environmental Awareness

BDAC is discussed as proficiency of the organization to leverage and manage its resources of big data to improve performance (Garmaki et al., 2023). BDAC has the ability to help the organizations to process the large amount of data for the identification of market opportunities, analysis of customer purchase decisions, and predict needs of the customers. Technology of big data is treated as major key to deal with the challenges of sustainability (Huang et al., 2022). Scholars have defined big data analytics as new generation of architecture and technologies that are designed to extract values in economic way from large amount of data by enabling high velocity analysis, discovery and capture (Horani et al., 2025). Big data analytics has important contributions towards several different environmental outcomes including digital servitization, product service system, smart circular business models, circular economy strategies, predictive maintenance, product lifetime extension, and cleaner manufacturing. Conservation of resources show that improvement in overall operations and matching efficiency through BDA leads to desirable environmental outcomes. Big data analytics provides a number of benefits for protecting environment by promoting sustainable practices, resource optimization, forecasting, and enhancing management. By integrating diverse and vast datasets, BDA enables the identification of market trends, the development of data informed strategies and prediction of environmental hazards. All these factors ultimately strengthen the agility, equity and effectiveness of environmental governance. As big data analytics provide different powers to handle problems of environment, its implementation shows a high range of different challenges across ethical domains, legal domains, infrastructural domains and technical domains. It is very important to control these barriers to ensure effective, equitable and responsible deployment of data driven environmental solutions (Yang et al., 2025).

The solutions of big data have the ability to analyze power consumption and power generation data by using smart meters. It can collect large amount of data from different sources including utilization of power habits such as users habits, situational awareness and data related to consumption of energy (Ahmed et al., 2017). By using predictive tools, dashboards, and advanced analytics, BDAC helps employees to understand sustainable performance, emission and consumption leading to ecofriendly and informed decisions (Mardikaningsih & Darmawan, 2025). BDAC also promotes the culture that is data driven where employees are practiced and accountable towards environmentally friendly practices. Scholars revealed that data driven capabilities plays key role to improve sustainability and develop awareness among employees (Ezeafulukwe et al., 2022). Scholars highlighted the role of BDAC in improving decision making by creating awareness (Wamba et al., 2017). Similarly, Mikalef et al. (2019) and Haylemariam et al. (2025) revealed the positive effect of BDAC on environmental awareness.

H4: BDAC has positive effect on EEA.

2.5 Mediation of Employee Environmental Awareness

The ability of an individual to interpret data in terms of environmental issues such as resource consumption patterns, climate trends and pollution levels is enhanced through employee biostatistical literacy. Moreover, this analytical competence develops a deeper understanding of the consequences of environment, therefore, strengthening EEA. Liu and Tobias (2024) shows that awareness plays the role of important cognitive mechanism which later translate knowledge into

environmental friendly actions, because individuals who recognize environmental risks are likely to adopt environmental friendly behavior.

Furthermore, environmental awareness among employees shapes norms and values that guide sustainable decision making in context of organization. As a result, the employees having higher biostatistical literacy are in better position to inform awareness related to environment that in turns promote behavior that is environmental friendly. So, environmental awareness plays the role of mediator by developing link between statistical literacy and environmental behavior. Moreover, EEA is discussed as mediator in past studies.

H5: EEA mediates between employee biostatistical literacy and employee environmental behavior.

Perception of employees regarding biostatistical knowledge and training shows their confidence to apply and understand different concepts of statistics to the environmental issues of real world. When it is perceived by the employees that they possess certain level of knowledge regarding biostatistics and have effective training, they can interpret data of environment more effectively, evaluate initiatives related to sustainability and identify risks associated with ecology (Priya K et al., 2023). Environmental awareness is increased though perceived competence by improving sensitivity to organizational responsibilities and environmental challenges.

Past studies highlight that employee awareness is important as important cognitive pathway by which knowledge and training impact behavior, in the form of employees are likely to engage in actions related to environment (Neruja & Arulrajah, 2021). Thus, employees who have strong perception related to biostatistics knowledge and training often develop environmental awareness, that subsequently drives environmental responsible behavior in the form of mediating role. The study by Laso Salvador et al. (2017) revealed that environmental awareness is strong mediator in their model.

H6: EEA mediates between employee perception of biostatistics knowledge and training and employee environmental behavior.

BDAC helps employees and organizations to derive, analyze and process insights from large amounts of environmental data such as resource efficiency, emissions, and energy usage. This capability improves employees' access to real time and accurate information. So, employees understanding of environmental sustainability challenges and their impacts improves behavior (Wu et al., 2025). It also leads to situations where employees' awareness regarding environmental issues improves, recognizing importance of sustainable practices and consequences of their actions. Present literature shows that awareness is important factor that translates different capabilities into behavioral results. When employees are aware of different environmental issues, they will adopt environmentally friendly practices at the workplace. So, employee awareness has the potential to play the role of mediator among big data analytical capability and environmental behavior (Haile & Singh, 2026). Study by Agrawal et al. (2023) revealed the mediating role of environmental awareness in their study. So, it assumed that

H7: EEA mediates between BDAC and employee environmental behavior.

Figure 1 is developed as Framework after in depth literature review showing antecedents of employee environmental.

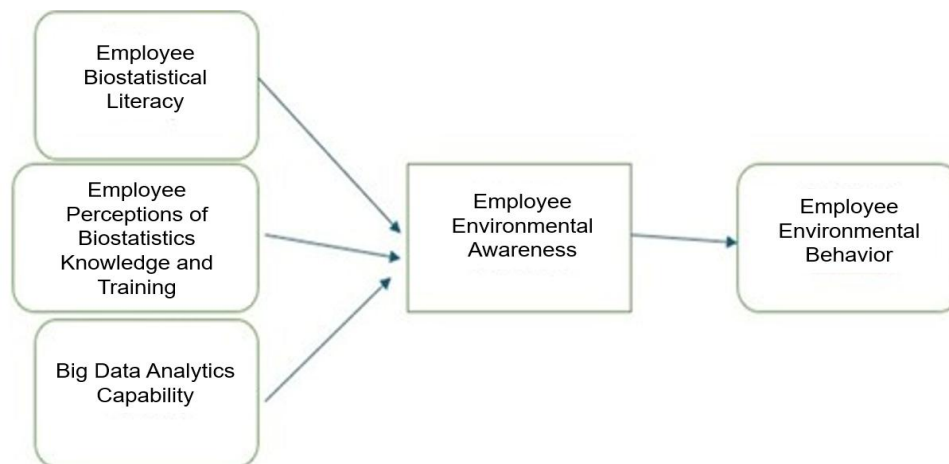


Figure 1: Theoretical Framework

3. Research Methodology

This research adopted quantitative methods on the basis of survey questionnaire. The data was gathered from the employees working in different organizations. Literature propose that sample size of the study must be between 30 to 500 for the purpose of analysis (Roscoe, 1969). Therefore, questionnaire was distributed among 250 employees using simple random sampling. This study received 168 usable questionnaires from the employees. The questionnaire was divided into

two sections. First section was related to demographic information on employees. Whereas second section was related to variables involved in the study.

In this study, employee environmental behavior was measured using items adopted by Muafi (2022), EEA was examined using items taken from Safari et al. (2018), measurement scale of BDAC was adapted from Hooi et al. (2018), items of employee perception of knowledge and training were adapted from Javali and Sunkad (2016), and questionnaire items of biostatistical literacy were adapted by Lipič and Ovsenik (2020). Analysis was conducted through Smart PLS 4.

4. Results

Based on the suggestions of past studies, measurement model analysis was carried out by utilizing convergent reliability, individual item loading, and Cronbach Alpha. The benchmark value to accept factor loading of each item is 0.60. Table 1 and Figure 2 shows that this criteria is fulfilled as all items carried forward for further analysis have loading of 0.60 (Haji-Othman et al., 2024).

Table 1: Factor Loading

	BDAC	EA	EB	EL	PBKT
BDAC1	0.899				
BDAC2	0.883				
BDAC3	0.870				
BDAC4	0.838				
EA1		0.912			
EA2		0.830			
EA3		0.900			
EA4		0.901			
EA5		0.866			
EB1			0.903		
EB2			0.883		
EB3			0.912		
EB4			0.886		
EL1				0.903	
EL2				0.871	
EL3				0.884	
EL4				0.909	
EL5				0.872	
EL6				0.849	
PBK1					0.606
PBK2					0.685
PBK3					0.846
PBK4					0.817
PBK5					0.806

Later, study used α to confirm the internal consistency. Dijkstra and Henseler (2015) mentioned acceptable figure for α is 0.70. Table 2 shows that all values of Cronbach Alpha are higher than the desired figure.

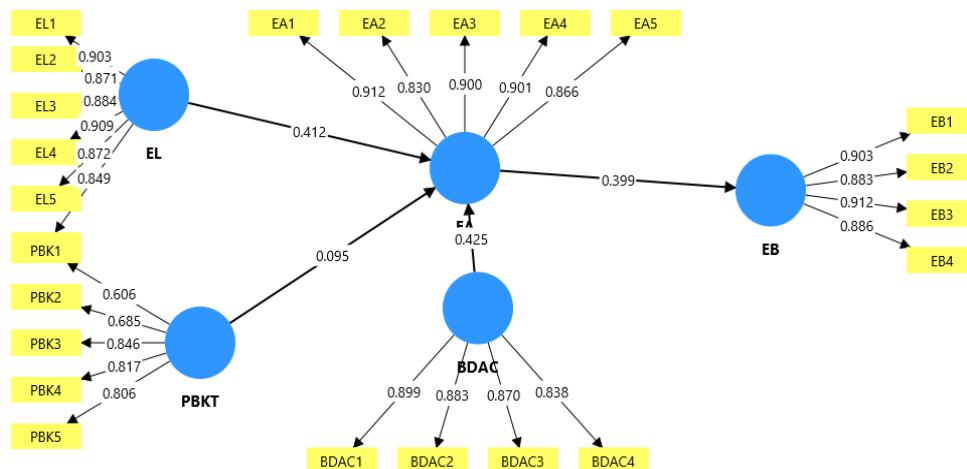


Figure 2: Measurement Model.

Table 2: Internal Consistency

	α	AVE
BDAC	0.896	0.762
EA	0.929	0.779
EB	0.918	0.803
EL	0.943	0.777
PBKT	0.812	0.574

Furthermore, AVE extracted was measured for assessment of convergent validity. Scholars recommended acceptable figure of AVE is 0.50 (Chin, 1998) which is achieved in Table 2. The criteria of Fornell and Larcker (1981) was used to confirm discriminant validity. As per this criteria, AVE values at the diagonal must be higher than remaining values. Table 3 shows this criteria to be met.

Table 3: Fornell and Larker

	BDAC	EA	EB	EL	PBKT
BDAC	0.873				
EA	0.482	0.882			
EB	0.248	0.399	0.896		
EL	0.138	0.503	0.341	0.882	
PBKT	0.003	0.235	0.377	0.337	0.758

At the stage of measurement analysis, this study examined the value of VIF for the determination of issue of multicollinearity. All values of VIF in Table 4 are less than 3 as recommended by Hair et al. (2017).

Table 4: VIF

	EA	EB
BDAC	1.022	
EA		1.000
EB		
EL	1.153	
PBKT	1.131	

In the end of measurement model, R square was determined to analyze the effect of independent variables on outcome variables. Values in Table 5 show that EA is 43.4% affected by the IVS of the study and EB is affected 15.9%.

Table 5: R Square

	R-Square
EA	0.434
EB	0.159

This study used 500 bootstrap samples under bootstrapping procedures to analyse the proposed hypothesis of the study. Results mentioned in Table 6 show that BDAC has positive effect on EA ($B=0.425$, $t=7.363$), accepting hypothesis, EA has positive effect on EB with ($B=0.399$, $t=6.603$), supporting hypothesis, EL has positive effect on EA ($B=0.312$, $t=5.197$), accepting hypothesis. In the end, PBKT has positive effect on EA ($B=-0.095$, $t=2.067$), accepting hypothesis.

Table 6: Direct Results

	β	Sigma	T	P
BDAC $\rightarrow$ EA	0.425	0.067	7.363	0.000
EA $\rightarrow$ EB	0.399	0.060	6.603	0.000
EL $\rightarrow$ EA	0.312	0.070	5.197	0.000
PBKT $\rightarrow$ EA	0.095	0.046	2.067	0.019

Indirect Results are given in Table 7 as well. Findings show that EA mediates between BDAC and EB ($t=4.401$), EA mediates between EL and EB, ($t=3.672$), and EA also mediates between PBKT and EB ($t=1.881$). Thus, all mediating hypotheses are supported.

Table 7: Indirect Results

	β	Sigma	T	P
BDAC $\rightarrow$ EA $\rightarrow$ EB	0.170	0.039	4.401	0.000
EL $\rightarrow$ EA $\rightarrow$ EB	0.144	0.035	3.672	0.000
PBKT $\rightarrow$ EA $\rightarrow$ EB	0.038	0.020	1.881	0.030

5. Discussion

This study examined effect of different factors on environmental behavior and environmental awareness among employees of organizations. Results revealed that employee biostatistical literacy has positive effect on employee environmental awareness. These findings highlight the main role of analytical competence to shape pro-environmental understanding within a firm. Employees having higher level of biostatistical literacy are in position to make informed judgement, recognize patterns and interpret environmental data regarding environmental issues. This capability provide strength to employee environmental awareness by enabling employees to critically evaluate environmental information rather keeping reliance on superficial knowledge.

Furthermore, employee biostatistical literacy develops evidence based thinking that supports deeper understanding of sustainable practices and environmental challenges. Resultantly, employees become conscious of environmental impacts linked to their actions at the workplace, thus enhancing employee environmental awareness. The positive association between employee biostatistical literacy and employee environmental awareness also show that organizations that invest in analytical and statistical training has the ability to develop workforce that is environmentally responsible. So, employee biostatistical literacy is one of the important factor that promotes employee environmental awareness and support sustainable decision making and informed decision making in organization. Study by [Simatupang et al. \(2025\)](#) supported findings of this study as well.

Findings also revealed that employee perception of biostatistical knowledge and training has positive effect on employee environmental awareness ([Farooq et al., 2026](#)). These findings offers a more perception based explanation of environmental issues. When employees perceive that they have enough biostatistical knowledge and they have received training that is relevant to biostatistics, they become more confident while engaging with environmental information. As a result of this perceived confidence, employees are encouraged to interpret data of sustainability, strengthening environmental awareness of employees.

Opposite to skill-based effects, employee perception of biostatistical knowledge and training shows psychological readiness that motivates employees to apply their knowledge and skills in contexts of environment. Employees who are opined that their training is valuable are likely to connect activities of organization with environmental outcomes, improving employee environmental awareness at collective and individual levels. Moreover, employee perception of knowledge and training can create supportive learning culture where environmental issues can be discussed more critically. As a result, development of positive employee perception of biostatistical knowledge and training build confidence and reinforces employee awareness, which enables employees to contribute towards goals of sustainability.

Results also demonstrate that big data analytical capability has positive effect on employee environmental knowledge. In past, [Haylemariam et al. \(2025\)](#) also demonstrated same results in their study. One of the possible reason for this finding is that big data analytical capability enables organizations to convert complex data sets into effective meaningful information. When organizations develop strong big data analytical capability, employees get access to data driven, real time information regarding sustainability outcomes, resource consumption and environmental performance. As a result of this continues exposure, employee knowledge regarding environmental issues is enhanced.

Possible reason of this outcome is that big data analytical capability provide support to dynamic and interactive development of knowledge, where employees are engaged with predictive models, analytical tools and dashboards. This engagement allows employees to recognize the effect of their action on environment, understand different environmental trends and identify inefficiencies. Moreover, big data analytical capability helps in sharing of knowledge in different departments of organizations, ensuring that all organizational information gets required environmental information. As employee of organizations interact with environments that are data rich, their knowledge regarding environment becomes more actionable and accurate.

Findings also revealed that employee environmental awareness has positive significant effect on employee environmental behavior. These findings suggests that awareness plays the role of cognitive foundation for actions. When employees have clear understanding of environmental problems and issues, they will internalize values of ecology, that will later guide their environmental behavior. This results also reflect that employee environmental awareness do not remain limited to knowledge. In-fact it is translated into employee environmental behavior by engagement in environmentally friendly activities.

From the perspective of employee environmental behavior, employee environmental awareness reduces uncertainty regarding outcomes of their actions. It enables employees to make decisions and choices that are environmentally friendly like minimizing waste, conserving resources and following sustainable practices. Furthermore, enhanced employee environmental awareness can encourage employees to align their behavior with environmental practices and strengthen personal accountability as well. Socially, employees having greater environmental awareness also influence their friends,

colleagues and family members, creating culture of sustainability within the organization. Thus, employee environmental awareness is important for the employees as it shapes employee environmental behavior. This result is aligned with the findings of.

Results also supported the notion that employee environmental awareness mediates between employee biostatistical literacy and employee environmental behavior. The results suggests that only processing biostatistical literacy is not enough to influence environmental behavior. For its complete influence, employees of the organizations need to develop a strong sense regarding environmental awareness. Biostatistical literacy improves ability of employees to interpret sustainability indicators, risks and environmental data which later strengthen the environmental awareness. This enhanced awareness plays the role of motivational mechanism that guides the employees towards the responsible environmental behavior.

The results indicate that employee environmental awareness plays the role of important bridge between employee perception of biostatistics knowledge and training with environmental behavior. When employees perceive knowledge and training of biostatistics as relevant and useful, they are likely to internalize concepts of environment embedded within the knowledge. whereas the perceived understanding is converted into real time environmental behavior only when it enhances awareness regarding environmental responsibilities and consequences. By this way, environmental awareness plays the role of bridge that converts perceived competence into actions that are meaningful. The findings show that organizations must design programs of biostatistics training that focuses on environmental relevancy to strengthen awareness among employees. Ultimately, it encourages sustainable behavior of an employee.

The findings revealed that there is important intervening role of employee environmental awareness between big data analytics capability and employee environmental behavior. The big data analytical capability enable employees working in an organization to interpret and process large scale environmental data. The impact of its behavior is dependent on the way employees are engaged with these insights at cognitive level. Environmental awareness come on the surface when employees are able to recognize consequences, trends and patterns. It is highlighted through different analytics making issue of environmental as personally relevant and visible. This awareness later make employees to make their actions inline with sustainable goals. Therefore, the pathway from big data analytics capability to environmental behavior is mediated by environmental awareness. The study by [Haile and Singh \(2026\)](#) discussed the mediating effect environmental awareness in their study.

6. Limitations and Future Directions

Despite theoretical and managerial contribution of the present study, there are few limitations which are discussed with future direction. Firstly, this study used one mediating variable between proposed exogenous and dependent variables. It is proposed that future studies may convert it into sequential mediation. Employee trust can be interesting addition as a mediator. Furthermore, SEM is used as analysis technique in present study. It is proposed that future studies may use other analysis techniques like Regression for the analysis of similar data. Thirdly, R² value of EB is 15% approximately. Though, this is in acceptable range but framework need other variables that can improve the value of R square in future. In the end, big data analytical capability is the independent variable, used in this research. It is proposed to add other technological variables that can later enhance effect on awareness and behavior of employee.

7. Theoretical and Managerial Contribution

There are a number of managerial and theoretical contributions of this research. In terms of theoretical contributions, most of past studies discuss performance of employees in general. This study is among very few ones that have discussed antecedents of environmental behavior of employees. Moreover, employee awareness is mostly discussed as exogenous variable in most of empirical studies. This study bridge the gap of limited studies that have highlighted environmental awareness as mediator. There are few studies in past that has discussed literacy among employees in terms of biostatistics, as most of studies have highlighted its role in general and literacy of employees. Thus, this study add to the body of knowledge by discussing literacy of employees in terms of biostatistics.

From managerial contribution perspective, the decision makers of the organizations should focus on enhancement of employee awareness so their behavior towards environment can be converted into pro-environmental behavior. Moreover, the findings also show the importance of big data analytics capability to enhance employee environmental awareness. furthermore, managers and important decision-makers of organizations can use these findings to improve environmental behavior among employees. Scholars can use findings of study for their upcoming studies and research.

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