

# Digital Information Systems for Credible Green Hotel Adoption in India: Integrating Certification, Consumer Trust, and Sustainability Performance

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## ABSTRACT

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The development of green hotels relies not only on environmental commitment and investments, but also on the information level that links together the hotel practice, the certifying organizations and institutions, the employees, and the consumers. Many sustainability attributes are hard to prove prior to booking. It can be difficult for consumers to gauge the value of measurable environmental actions when contrasted with claims in marketing campaigns, and for managers when they must report across a range of metrics while they have only limited technical skills and the company does not know whether there is commercial demand for sustainable investments. This conceptual paper discusses how digital information systems can enable credible green hotel adoption in India that marries the availability of sustainable information, certifying evidence, organisational implementation, and communication to the consumer. Based on the Theory of Planned Behaviour, Institutional Theory, the Triple Bottom Line, the information asymmetry and information systems success perspectives, it presents a multi-level framework of the relationship between digital sustainability information capability, information data quality, information certification traceability, manager decision-making, employee implementation, consumer trust and sustainability outcomes. The framework separates visibility with the right answers and verified performance—namely, a website or booking-platform badge has nothing to offer if the claim itself is not accurate, comparable, current, and auditable. Proposed is a staged architecture with operational data capture, governance and validation, integration with certification, decision-support analytics and disclosure transparency. The paper also acknowledges potential challenges such as incongruence of indicators, lack of data ownership, privacy issues, greenwashing and technological costs, along with the lack of small independent hotels. The paper describes but does not make new field observations. The contribution lies in the research model and practical design principles that aim at improving the trustworthiness and applicability of sustainability evidence in the Indian Hospitality Industry.

**Keywords:** Green hotels; information systems; digital sustainability reporting; eco-certification; consumer trust; greenwashing; tourism technology; India

## 1. INTRODUCTION

The main reasons for the strategic nature of sustainable hospitality are the energy and water consumed, along with the solid and food waste generated, the complexity of the supply chains and reliance on environmental and social conditions that are experienced at the local level. Low impact hotel programmes aim to mitigate these impacts, without compromising the quality

of the hotel service or commercial sustainability (Chan & Hsu, 2016). In contrast to that, adoption is not just about joining the club wearing "environmentalist" shirts, or about putting some great technology into place. Any hotel must find suitable practices, set up a hotel responsibility system, assess implementation, demonstrate performance credibly, and communicate information appropriately to facilitate management decisions and informed customer choice.

The activities are information/knowledge based. In order to manage energy, there needs to be timely energy usage data; to conserve water, water usage monitoring is required; to reduce wasting, a collection of quantities and waste routes needs to be available; to manage procurement, there needs to be supplier information; to educate and train employees, a record of the training needs is required; and to certify, evidence that can be reviewed against the defined criteria is required. Without having your sustainability data in one place—whether in spreadsheets, invoices, engineering logs, staff checklists, or marketing documents—you won't know exactly what's happening and risk having an incomplete picture. These data sources can be linked through digital information systems (Watson et al., 2010); however, technology is not the answer to improving the environment. Their worth resides in their quality, in how well they are governed, in their capacity in the organisation and in the decisions that are taken from them.

This question is applicable to the diverse hotel industry in India, from international chains to the small independent hotels with different financial and technological capacities, resorts, boutique hotels and domestic brands among them. Smaller hotels could have informal processes and small staff; larger properties may be responsible for having engineering teams and reporting processes (Mensah, 2006). It is not likely that a single digital model will work for every building. The challenge for the strategic design is to create proportionate information practices that enhance credibility, yet result in an economic burden that is not manageable. Several of the environmental attributes can't be directly apprehended by the consumers before booking. A green label or sustainability statement could benefit consumers' ability to compare hotels; where the meaning behind the label is vague may be confusing. Specificity, Currency, Comparability, and Evidence are the key components in credible communication. Technology that is not part of the business could contribute to greenwashing instead of to combating it.

The four questions this paper asks are what information capabilities are needed to manage and showcase green practices; how can information transparency and governance help increase the credibility of the claims; how can digital disclosure affect trust and the decision to book "green" accommodation; and what risks are there that need to be addressed across the hotel categories in India? It offers contributions so it includes the information-system capability, the theories on the intention of consumers and institutional adoption, along with theories on sustainability performance and then also on splitting up capture, verification, interpretation, and communication, and also suggesting a staged implementation model with testable propositions. The paper is conceptual and not an actual synthetic thesis output of field evidence.

## **2. CONCEPTUAL BACKGROUND AND LITERATURE**

Green hotels involve environmental issues of hotel facilities, services and procurement and organise the hotel in a way that responds to them. These may involve efficient lighting and efficient HVAC controls, renewable energy, water-efficient systems, rainwater harvesting, wastewater recycling, waste management segmentation, reduction in food waste, reduction in single-use plastics, sustainable procurement, training of employees/engagement of guests and more. There are a number of these practices that vary in cost, complexity, visibility and environmental impact. So it will not suffice to make a binary distinction between green and non-green. Progress to structured management and independent verification and into strategic integration is a better measure.

The concept of the Triple Bottom Line (TBL) takes into account the environmental, economic, and social outcomes (Elkington, 1997). Environmental performance deals with utilization of resources, emission, waste-generating and impacts on the environment. Economic performance is about costs, resilience, market position and value. Social performance covers employee well-being, training, inclusion, community relationships and responsible procurement. The dimensions can complement each other or come with compromises. A costly intervention can help to minimize environmental impacts with a sacrifice in financial terms for a small hotel; a campaign can bring preparation to the fore, but not to the bottom line. Balanced indicators can be gathered and may reveal such relationships by an information system, at least when they are not the ones most easily marketed.

The Theory of Planned Behaviour (TPB) was used to describe the determinants of behavioural intention, which include attitude, subjective norms, perceived behavioural control (Ajzen, 1991). Consumers might be more likely to choose an

environmentally responsible hotel, to feel the social expectation of doing so, and to be aware of the options and cost of choosing green. They are seen to explain hotel intention and to demonstrate that stated preference and actual behaviour do not necessarily match from hotel research using TPB (Han et al., 2010; Verma and Chandra, 2018). Being able to more easily identify and compare green hotels on digital platforms could enhance perceived control. They can also impact trust through the provision of certifications and information about performance that can be measured. These effects are based on the quality of information (Kim & Han, 2010).

The institutional theory is based on the idea that organisations tend to react to coercive, normative and mimetic pressures (DiMaggio & Powell, 1983). By being encouraged by government, certification, professional associations, competitors and industry norms, the adoption of sustainability can be encouraged. Information systems can convert all of these pressures into routine via standardized reporting, audit trails, compliance calendars, and management dashboards. Even if policies can be recorded, if there is no evidence of their implementation, this can be symbolic formal compliance. The digital reporting should link announced engagements to action taken and amended.

Furthermore, information asymmetry is at the core of sustainability claims as customers are unable to easily access data regarding wastewater treatment, suppliers' practices and the environmental footprint of a stay or the amount of energy usage. Third party certification may provide a mark of confirmed performance – but this works only in the event of a credible scheme; one that's comprehensible. Source credibility and the specificity of the claims have been shown to affect trust in the research of eco-labels (Atkinson & Rosenthal, 2014). The intention–behaviour gap (I–B gap) has also been researched as a potential tool for hotel certification (Chi et al., 2022). It is possible to make the issuer, scope, validity period and criteria accessible within a digital system, but it is impossible for a digital system to replace independent assessment (Font, 2002).

Greenwashing is the communication which presents the impression of good performance, but which is actually exaggerated or incorrect. It can be extrapolated from statements that are not specific enough, selectively presented information, comparisons made without backup, and/or a phenomenon that occurs in promotional claims, but does not exist in real practice. Greenwashing can raise the amount of confusion and perceived risk, and also engage in lowering green trust (Chen & Chang, 2013; Delmas & Burbano, 2011). This may be made worse by the use of digital media as it can be repeated on websites, booking platforms and social media. Properly kept records can help to increase accountability by providing evidence of grounds for claims and ensure changes are trackable.

Adding to that the information-systems point of view is that the system being assessed can't only be measured by its existence or its creation of a dashboard. Its value is related to information quality, system quality, use, satisfaction, and benefits in decision making (Wang & Strong, 1996). The DeLone and McLean (2003) model can serve as a good tool for assessing the reliability, timeliness, accessibility and usefulness of sustainability information. With the hotel, it doesn't matter how much data is gathered—it depends on whether information helps to better manage the resources, to ensure compliance, to take actions, to invest and to understand the customers better.

Research has identified a disconnect between conducting green practices, documenting results and telling others about it. The first one is an operational one, second an informational and governance one and third is market oriented. In this paper, they are related to each other but remain objects of separate analysis. All of digital maturity counts but it isn't a replacement for environmental performance.

### **3. RESEARCH DESIGN AND METHOD**

The paper follows a conceptual research approach of theory integration and structured synthesis of literature related to the concept of sustainable hospitality, consumer behaviour, institutional adoption, green marketing and information systems. It provides a framework for future empirical tests, instead of giving new respondent-level results. Synthesis is structured around operational sustainability data, data governance and verification, organizational decision support, consumer disclosure and sustainability outcomes.

The relevant literature was identified with regard to the concepts of green hotels and consumer trust, certification, greenwashing, information quality in the digital domain, and how it contributes to organisational sustainability. Items and theories offer a foundation that form the underlying constructs, and items and theories specific to hospitality provide a foundation for the framework in the context of hotel decision making. The synthesis depicts how the information applies to the respective phases (collection, verification, management action, and external disclosure). It does not represent a comprehensive

systematic review to provide a reproducible screening process. The related thesis model calls for sample sizes of 400 customers, 150 managers or executives and 200 employees. These are planned parameters, NOT the actual fieldwork. The thesis was not accompanied by any real dataset collected from the respondents; any datasets produced elsewhere synthetically and used to perform analyses should not be reported as collected data collected from the respondents. These synthetic outputs are not the basis for empirical study in this paper.

Later on, environmental attitude, subjective norms, perceived behavioural control, certification trust, perceived greenwashing, behavioural intention and willingness to pay could be measured. Digital information capability could be used as a managerial measure, as could be investment cost, long-term savings and savings in money and time, brand enhancement, certification exposure, institutional support, and green practice adoption. Possible employee-related measures include training in issues, management commitment, green culture, usability of the system and the quality of system implementation. Indicators may be able to be used at the property level to measure this, both in terms of maturity of practices and environmental, economic, and social aspects of the practices.

The sequence for an empirical study may start by the screening and descriptive statistics followed by the reliability and construct-validity assessment. Confirmatory and exploratory factor analyses can be used to evaluate measurement structure when the number of cases is adequate. Directional relationships could be tested with regression analysis, and the integrated model with structural equation modeling. Significance tests should be accompanied by effect sizes as well as confidence intervals. Since this paper is conceptual, there are no claims of hypothesis acceptance, fit statistics, p-values or coefficients reported.

#### **4. PROPOSED FRAMEWORK: DIGITAL CAPABILITY FOR CREDIBLE GREEN HOTEL ADOPTION**

The new structure has five mutually interdependent levels: Operational data capture; Data governance and verification; Management analytics and organisational action; Certification and institutional interoperability; Consumer disclosure. These layers are subjected to a feedback. Operational data drives management decisions, verified information allows for certification and communication, guest feedback and audits determine gaps, and findings of these are fed back into operational planning.

Layer 1—Operational data capture. Hotels require a matching set of indicators in line with their size, facilities and priorities for sustainability. This can be electricity/fuel use, waste amounts, reuse of linen, food waste, sourcing processes, employee education and guest interaction. Meters, Invoices, Engineering Systems, Inventory Records, Waste records from contractors or Standardised checklist or documentation can be used as sources for data. Units, periods, property boundaries and responsible owners are to be reported. Energy use without consideration of occupancy may not be as useful as energy use per occupied room or guest-night for a monthly electricity total (Bohdanowicz & Martinac, 2007). This system should maintain the original values in the source and the calculation processes, and not simply a summary score.

Layer 2—Data governance and verification. Governance establishes who records, reviews, approves, corrects and discloses information. Each indicator will require a Definition, a Source, a Frequency, an Owner, a validation rule, and an evidence record. The system should differentiate between Measured, Targets, Policies and Self-reported Activity. It should document the methodology changes to avoid the perceived improvements when methodology is changed, such as by redefining geographic areas or by computation methods. Internal checks will detect missing values, improbable changes or non-continuous periods of readings. Where claims must be supported by independent certificates, these are still relevant.

Layer 3—the management analytics and organisation actions. A dashboard without value is one that cannot help with decision-making. Managers should benchmark the performance with a baseline, a target, an occupancy-adjusted trend, and operational issues. An alerts system can help detect an unusual use of a plant, waste reports can help expose persistent disposal issues, training can produce training gaps and cost summaries can assist with investment appraisal. One finding will result in accountability from a Manager, action plans, a timeframe to take action and a review. If not, digital reporting can turn into a rigged compliance procedure for no significant measure.

The fourth layer – Certification and institutional interoperability. Hotels can submit proof to certification bodies, governmental initiatives, companies and associations. Obtaining the same information multiple times adds administrative tasks and leads to data variations. Systems should align and reconcile internal indicators with external indicators, the sources, and other major differences in terminology used in the indicators. An internal indicator does not meet all the requirements. The details of the

issuing authority, the property/service covered, criteria for the issuance, the date of issuance, the expiration date, and the verification status should be recorded in the system.

Layer 5—Consumer-facing disclosure. Sustainability data can be conveyed on booking sites and hotel websites via small and standardized sections. The certification scheme, validity, verified practices, access to policies, simple explanations of what each claim entails etc. are useful information. Claims must not imply that there is no environmental impact or an indication that a measure that it ensures sustainability overall. If data is not provided or verified, it does not imply verified performance. An obvious lack of information can be more trusted than a green sign with no qualifications.

Feedback received from consumers and employees is a part of the framework. Guest questions can highlight confusing labelling, complaints can highlight implementation deficiencies, staff feedback can highlight unrealistic reporting requirements and audit results can highlight weak controls. These inputs ought to amend processes, training and public statements. Digital information therefore has the value of a learning tool, instead of just a sales avenue.

## **5. THEORETICAL INTEGRATION AND PROPOSITIONS**

The model is incorporating the following theories: TPB and Institutional Theory, TBL, information asymmetry, and information-systems success. TPB provides an explanation on how information can influence attitudes, perceived social expectations, perceived control and intentions. The Institutional Theory is an account of the responses of organisations to the pressure they receive from the regulatory or professional environment or other competitors. The outcome dimensions to be monitored are specified using TBL. The reason why independent evidence is important to customers is due to information asymmetry. Information-systems success has emphasized the need to have the information system used if benefits are to materialize and the need for good information quality.

The theories complement each other and are not synonymous. An example is that TPB concerns the decision making process of the consumer, Institutional Theory looks at what the organizations do to adapt to external conditions, TBL defines for what they strive the outcomes of sustainability, and information-systems theory concerns the capability and benefits of information systems. Their seamless integration allows for a multi-layered account of their contribution: reporting-system uptake can be promoted by pressure from the institution; Improved information quality may support action from management; Verified disclosure may facilitate increasing trust; Operational improvements may assist in achieving the institution's sustainability goals.

H1: Digital sustainability information capability has a positive correlation with the consistency and completeness of monitoring green practices. Fixed definitions, ownership and regular review can help minimise reliance on informal records. The association might be less if employees do not receive training or managers do not intervene.

The 2nd proposition states that data governance and external verification have a positive impact on the credibility of consumer facing sustainability claims. It's not about having a digital record, it's about doing so in a way which can be traced to a defined indicator, source, period, and verification mechanism. Verification should be separate to the digital disclosure.

Proposition 3: Sustainability information is seen to have a positive impact on the trust in Certification and consumer confidence. Information needs to be correct, easily understood, comparable and up-to-date. The information can be overwhelming and misleading for the consumers and oversimplification can mask differences between schemes.

Hypothesis 4: Certification trust and perceived behavioural control have a positive relationship with intention to select a green hotel. Perceived control relates to the hotel's accessibility, affordability, and practicality; trust refers to the reduction of uncertainty about claims. Obstacles like pricing, location and purpose of travel cannot be resolved by digital platforms.

Perceived environmentally responsible product quality degrades the correlation between loyalty and payment for environmental responsibility. If claims are ambiguous, contradictory or unverifiable, they can have a detrimental impact on consumer receptivity to paying a premium. To minimize this risk, a true representation of actual practice in using digital evidence must be obtained and accepted.

Proposition 6: When management commitment and employees' sustainability capability are combined, the relationship between digital information capability and implementation quality is further developed. The systems can be reliable at alerting people accurately, but workers require: Authority to take action; Training to respond correctly; Time for them to respond; Resources for them to take action. Assessments of technology should be made in conjunction with the organizational routines.

Proposition 7: Smaller hotels benefit from institutional backing and assistance on certification of digital sustainability systems, which is a factor that promotes its adoption. Costs of participation may be minimized with financial support, widely available templates, training and technical assistance. The impact is related to accessibility - if a programme is not easy to navigate, it has very little practical use.

Proposition 8: Digital information capability indirectly supports the performance of TBL by its role in monitoring, taking corrective action, being ready for certification and credible communication. But the use of technology doesn't necessarily make things more sustainable. To make the pathway effective, quality data is needed, and it must be used by managers, implemented by workers and invested in with the support of the right practices.

A multilevel design could be used to test these propositions. Customer data would be used to gauge trust and greenwashing, intent and willingness to pay. Manager data would measure adoption and exposure to certification, cost, and information capability. Data about employees should be used to evaluate training, usability of the system, commitment and implementation. Evaluation of operational outcomes would be enhanced with property-level data. Consistent use of anonymous property coding and/or an explicit consent process is desirable for creating linked datasets.

## **6. IMPLEMENTATION STRATEGY FOR INDIAN HOTELS**

There should be a continuum of implementation paths following property size, technical capacity and resources. Stage one is a baseline inventory – what are the existing practices, what is reliably available for information, and what decisions need to be based on better evidence. It would be best to select a limited number of indicators with an operational relevance to the programme instead of trying to measure as many dimensions of sustainability as possible right from the start.

In stage two, the standardisation process takes place. Each indicator should have a definition, unit, period, a source, a responsible role and a validation rule. Water use should include the property covered and whether or not the value is measured or estimated. Wherever possible, records of waste should be clearly differentiated according to category and route. Records of training should not only show a policy has been introduced but that people have participated. Standardisation allows comparison over time, and will ensure that there is no inconsistent interpretation.

The third one is management integration. The data should be reviewed in a regular meeting (or dashboard cycle) with corrective actions. A hotel may be using more than usual when there is the same amount of occupancy; the food used might be heavy on certain days in the year; or employees are uneducated on certain needs. The response should be documented and connected to each finding. The aim is converting information to decisions, not to make as many charts as possible.

The fourth stage is to be certified. Gaps should be identified by asking hotels to trace existing evidence to the criteria of a relevant certificate programme. They must not think that a 'dashboard in-house' is a 'statement' and should be aware that not all schemes recognise the same measures. Even in a scenario where it is not immediately cost-coherent, hotels can enhance their data governance and operations to prepare for independent certification.

Consumer disclosure comes as Stage 5. Claims must be expressed in plain English, referenced with the current evidence, and updated whenever certificates have expired or practices change. Certification displays should distinguish between certification as a whole and individual practices, not suggest full coverage when it is not backed by a full claim. Claims should be explained correctly by the Marketing/front office personnel.

In implementing, small and independent properties should focus on being affordable and not too complex. Rather than elaborate enterprise systems, shared templates, cost-saving tools, training from industry associations, and technical support groups can prove to be more feasible options. If access controls, backups, ownership and definitions are clear, simple spreadsheet tools or even simple cloud tools can be helpful. Information reliability and usage, rather than technology complexity, should be considered digital maturity.

For Chains and big hotels, inclusion of properties can be a challenge. While indicators for Corporate systems can be standardised, there is still a need to consider the local context. Each country represents a different destination for climate, water stress, energy, waste systems and occupancy, and supplier availability. Comparisons can be achieved through a common core and local priorities through property-specific measures. Excessive standardisation hides local hazards, and insufficient standardisation makes it difficult to compare.

Public institutions and associations can support adoption by providing reporting templates, conducting training, providing technical assistance, making the information that can be certified easily accessible and providing incentives for successful improvements. Evidence of uptake, extent of use, reduction in administrative complexity and evidence of improved operational practices are more valuable measures of support than the volume of guidance documents.

## **7. RISKS, GOVERNANCE, AND ETHICAL CONSIDERATIONS**

Digital Sustainability Systems involve risks. The first is data quality: incomplete meters, irregular invoices, estimation errors, and boundary changes of properties can cause trends to be distorted. A protocol should describe who is providing it, how often it is being provided, if it is complete, if it is plausible, and the revision history. Estimates should be justified and not reported as measurements.

The second is called metric gaming. Indicators of a hotel's environmental performance are not uniformly gathered, and if scored by a few visible, tangible indicators, they might tune up the external, tangible measures but ignore other less obvious ones. A hotel may advertise towel re-use and offer little to no information on energy, water, waste, procurement and/or employee conditions. This can be minimized with balanced TBL reporting. Material indicators should be made and checked from time to time.

The third is greenwashing by technology. It's easy to make the impression of legitimacy when the information coming behind it is low quality, especially with a sophisticated website, a dashboard, or a badge. The framework thus ensures that digital channels are linked to data validity and independent verification. Claims must be traceable, specific, time-bound, and proportionate to evidence. Attempts should be made to save correction history, and approvals should be documented.

Fourthly, privacy and cybersecurity risk. Employee records, guest feedback, supplier info and access logs can include sensitive data, although this information can be consolidated during the operational phase. Only required personal information should be collected by systems; there should be control of access based on user responsibility; protections should be in place for the storage and transfer of information; retention times should be set; and guidelines should be in place for what to do if there is a breach of information. The recording of performance should usually be based on the sum or average rather than on individual performance records.

The fifth risk is exclusion. A digital-first certification programme might not be suitable for small properties, out-of-town locations, or less technical operators/connectivity. Such a relationship should enable a flexible manner of implementation and reporting of data without compromising the level of evidence for facts reported as 'independently verified'.

Governance has to share responsibility. Senior management should approve the information policies, operational departments should be granted data ownership, a designated reviewer should validate the indicators, marketing should use approved claims and external certifiers should be kept independent. Staff must have a mechanism to document false claims and/or flawed records. Integrity should be added during the design of the system—before it is built.

## **8. DISCUSSION**

The idea of the centrality of information systems in green hospitality is suggested by the framework. Physical activities relate to the decisions made by the managers, organisational activities relate to the external standards, and environmental performance relates to consumer interpretation. Lack of awareness, technology and all the rest is not the only challenge to sustainability. It is also a coordination problem. Information that is needed to make decisions might be spread over departments, or information that is provided to consumers may be represented in a more causal or oversimplified way, disconnected from information supporting a decision.

The document examines the importance of digitalisation not being considered a separate environmental development. Technical capability may be enhanced through the use of sensors or software or by using a dashboard, but this does not necessarily indicate that resource use has been reduced or that social outcomes have improved as a result (Melville, 2010). Digital capabilities, information quality, Managerial use, Operational implementation, Verified performance, and credible disclosure are the relevant chain. Any breaks in any stage reduce benefits. If data aren't accurate and do not trigger action, what is the value of the operational data? If internal improvements are conveyed via unverified claims, then how credible are they?

The relationship between TPB and disclosure is a potential pathway to consumer intention. Improved information can help to augment perceived control through facilitating comparison of options and strengthening trust through certification evidence.

Information is not the sole factor in hotel choice; other factors are price, location, service quality, ease of access, travel goals and availability (Manaktola & Jauhari, 2007). Digital communication should thus be seen as a piece of the decision process, not as a promise to a "premium price".

As for external support, Institutional Theory provides insight into why this can facilitate adoption, while also raising the profile of ceremonial compliance. If reporting is implemented as a way to meet an outside mandate, it doesn't need to drive behaviour change. To successfully implement from the formal level to the actual level, organisational commitment and employee participation are essential. Twenty years of associations developing workable practice procedures and of incentives to overcome financial hurdles are no substitute for internal accountability.

The TBL approach has the benefit of preventing a narrow commercializing point of view. Though cost reduction and brand improvement might be inducing factors to adopt, other issues, like the environment, should not be neglected in performance. Tracking utility costs alone is insufficient to identify the need for employee training and development, or to determine whether the procurement is valid or fair, or whether the benefit is equitable. Balanced measurement provides for a wider view but there needs to be a possibility for indicators to be set for various properties.

The theoretical contribution is the definition of 'digital sustainability information capability' as an enabling construct for which the mediating mechanisms are governance, managerial use and implementation. This means that the improvements in sustainability due to technology are not assumed. The practical contribution is a staged path for the improvement of evidence quality before investing in complex platforms in hotels. Research contribution: This is a set of propositions to be tested with the data at the level of consumer, manager, employee and property. Digital capability and sustainability outcomes should be differentiated. Digital capability can be assessed with indicator standardisation, the integration of data, timeliness, audit trails, clarity of roles, their use of a dashboard and management review. The quality of information can be evaluated by means of its accuracy, completeness, comparability and interpretability. Awareness does not equal credibility, and consumer trust should not be confused with consumer perceived greenwashing.

Other research should employ designs which allow for greater inference. Cross-sectional questionnaires, in addition to measuring associations, cannot establish the cause-and-effect direction. Longitudinal studies could explore if improvements in resource efficiency are prior to the introduction of reporting systems. Comparisons could also be quasi-experimental if, at least within a college and/or state district, some properties get some reporting support and comparable properties do not. Aggregating system logs, utility log records, certification documents, survey data and interviews would minimize the need for self-reports (Podsakoff et al., 2003).

The first implication for managers is that it involves making decisions first, and selecting software second. Think about and choose indicators to help with decisions that will be made repeatedly, but where there is a need for more information. Second, put in place data ownership and validation prior to public reporting. Thirdly, educate staff about what information they should be collecting and why. Fourth, check the claims of certification for scope and validity. Lastly, only make claims you can back up from the hotel. The framework brings clarity to certifying bodies and associations, helps differentiate between certifications, helps with government requirements for reporting, and provides clear verification and information for smaller establishments. When there is a mapping indicator present on each scheme, this can help minimise data entry, but any difference between standards should be clear. Comparability of certification systems in terms of the level of assurance or their criteria is not guaranteed by a shared field.

The information on sustainability, provided on booking platforms, should not establish false equivalences. Platforms could be able to differentiate between third-party certification, hotel-reported practices and independently verified quantitative indicators. They need to indicate the expiry date of the certificate, and not just generic badges that have no explanation of what they are. Clear reporting can also assist in preventing platforms from being exposed to false environmental claims. From a policymaker's perspective, digital support programmes should be judged on their ability to enhance the quality of data, implementation of appropriate practices, and access to trusted certification. Low-use, low-cost systems may be the result of subsidising software without a training and/or governance program; complex reporting systems without technical support may cause smaller hotels to be excluded. Balanced policies involve proportionate policies, proportionality, and verification and accessibility; and clear rules with incentives.

## 9. LIMITATIONS AND CONCLUSION

The present paper is not a conceptual review exhausting any possible databases, nor have the proposed relationships been empirically tested here. India's Hotel Industry is diversified in nature, and the feasibility and impact can differ depending on types of Hotels, locations, ownership, infrastructure, and managerial skills. The construction and propositions need to be refined by expert review, pilot testing and empirical validation. This article does not make the synthetic thesis outputs as evidence from actual respondents.

Adopting green hotel behaviour goes beyond going green and above visiting websites. It is both connected and information processing, which captures operational data, validates claims, supports management decisions, connects evidence to certification and communicates information transparently. They are combined in a 5-layered structure that acknowledges the importance of 'governance', 'management commitment', 'employee capacity', and 'institutional conditions' in enabling the creation of value through technology.

A 'graduated and progressive' strategy is more applicable than a single 'technology takes over' one for India. Hotels can have a solid foundation and baseline, standardised records, implement management review, develop evidence for certification and share credible statements via consumer-friendly outlets. For larger properties, integration across systems is likely to be of value, and for smaller properties, shared templates, low-cost tools and industry support are likely to help. In all categories, sustainability claims publicly made need to be verifiable on the basis of credible evidence, and not be more than that evidence supports.

The proposed model constitutes a basis for research from an empirical point of view on the concurrent field of Information Systems, Sustainable Hospitality and Tourism Technology. Its fundamental idea is that digital information capability can indirectly contribute to the accomplishment of green hotel outcomes via the enhancement of data quality and verification, organisational action, and consumer trust. To determine the value of this pathway using real operational and respondent data would be beneficial for identifying the capabilities that provide value, which hotel category, and which institutional conditions.

**Figure 1. Proposed digital information architecture for credible green hotel adoption**

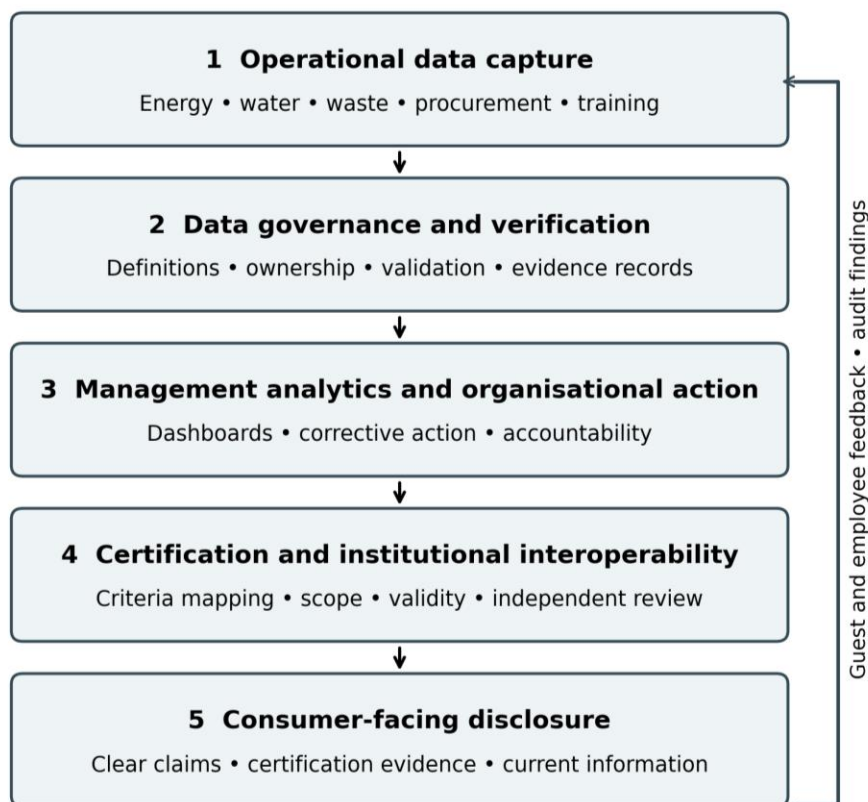


**Table 1. Construct definitions and proposed measurement domains**

| Construct                                     | Definition                                                                | Proposed measurement domains                                                                        |
|-----------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Digital sustainability information capability | Capacity to capture, integrate and use sustainability information.        | Indicator standardisation; integration; timeliness; audit trails; dashboard use; management review. |
| Information quality                           | Usefulness and reliability of sustainability information.                 | Accuracy; completeness; comparability; interpretability; currency.                                  |
| Data governance and verification              | Rules and checks that make claims traceable and reviewable.               | Data ownership; validation; source records; revision history; independent verification.             |
| Certification trust                           | Consumer confidence in certification and its supporting evidence.         | Issuer credibility; scope clarity; validity; comprehensibility; confidence in verification.         |
| Perceived behavioural control                 | Perceived ability to choose a green hotel.                                | Availability; affordability; accessibility; practical ease of choice.                               |
| Perceived greenwashing                        | Perception that environmental claims exaggerate or misrepresent practice. | Ambiguity; contradiction; unverifiability; perceived exaggeration.                                  |
| Consumer responses                            | Intended or stated responses to green hotel information.                  | Green hotel selection intention; willingness to pay; loyalty.                                       |
| Organisational implementation                 | Translation of information into operational action.                       | Management commitment; employee training; system usability; green culture; corrective action.       |
| Institutional support                         | External assistance and pressures affecting adoption.                     | Certification assistance; templates; training; technical and financial support.                     |
| Triple Bottom Line outcomes                   | Environmental, economic and social performance.                           | Resource use; emissions; waste; costs; resilience; employee well-being; responsible procurement.    |

**Table 2. Research propositions and suggested empirical tests**

| Proposition | Relationship proposed in the text                                            | Suggested empirical test                                                                  |
|-------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 1           | Digital information capability → consistent and complete monitoring.         | Manager survey and record audit; regression; assess training and managerial intervention. |
| 2           | Data governance and external verification → credible consumer-facing claims. | Evidence audit and disclosure review; regression or structural equation modelling.        |

| Proposition | Relationship proposed in the text                                                                                                            | Suggested empirical test                                                                         |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 3           | Sustainability information → certification trust and consumer confidence.                                                                    | Consumer survey; information-quality measures; regression or structural equation modelling.      |
| 4           | Certification trust and perceived behavioural control → green hotel selection intention.                                                     | Consumer survey; confirmatory factor analysis and structural equation modelling.                 |
| 5           | Perceived environmentally responsible product quality weakens the loyalty–payment relationship.                                              | Consumer measures of perceived quality, loyalty and willingness to pay; interaction analysis.    |
| 6           | Management commitment and employee capability strengthen capability–implementation links.                                                    | Linked manager–employee data; moderation analysis, accounting for property clustering.           |
| 7           | Institutional backing and certification assistance support adoption in smaller hotels.                                                       | Small-property manager survey; regression with property characteristics as covariates.           |
| 8           | Digital capability indirectly supports Triple Bottom Line performance through monitoring, action, certification readiness and communication. | Linked property records and surveys; mediation analysis; longitudinal evaluation where feasible. |

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