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Analysing Balanced Scorecard's Influence on Healthcare Sustainability of Haryana

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Abstract:

The constant and quick changes in the healthcare industry have made performance reviews a vital tool for managers in the field. Achieving sustainable performance management entails boosting an organization's efficacy and efficiency while taking into account all sustainability factors. This study looks at how strategic HRM enhancements, accounting information systems, and digital transformation affect the performance of organizations and sustainable development. The performance of the company is assessed in this study using the balanced scorecard (BSC). The study puts out a theoretical framework for sustainable organizational growth that combines human resources involvement with traditional and digital information technologies. In an empirical study, a questionnaire is used to poll 209 healthcare sector workers in order to evaluate the theoretical model. The research findings, which were based on structural equation modelling, demonstrated that BSC dimensions are substantially favourably impacted by the efficacy and effectiveness of the AIS and the strategic management of human resources. Furthermore, with internal process dimension having the greatest influence, using BSC to measure organizational performance has a substantial impact on sustainable growth.

Keywords:
Balanced Scorecard (BSC), Digital Transformation (DT), Accounting Information System (AIS), Strategic Human Resource Management (SHRM), Sustainable Development (SD).

Introduction:

Many healthcare companies are choosing to employ performance evaluation methods that include all performance parameters as a result of the movement toward sustainable development. Patients and other stakeholders are particularly concerned with assessing sustainable performance since value is created in the knowledge- and digital-based economy mostly through intangible assets, which are very challenging to assess. Up to the 1990s, organizations used methods for performance evaluation that exclusively took financial accounting data and financial criteria into consideration. Intangible assets, or intellectual property, generate higher added value and significantly increase competitive advantage as they are

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immeasurable in monetary terms. Intangible assets include human resources' skills and expertise, AIS' features, and the leading edge of digital technology used in business operations. The primary advantage of intangible assets is their difficulty for competitors to copy. The main disadvantage is that evaluating the performance of intangible assets is difficult. Conventional approaches, which were focused on financial metrics, did not offer data that could be used to solve issues or take advantage of opportunities pertaining to clients, product quality, and the workforce. Consequently, there were differing views in performance reviews on the necessity of using non-financial criteria to quantify intangible assets.

Businesses have embraced the use of diverse performance evaluation techniques that are in line with their strategic goals. Organizations use a variety of performance assessment approaches that are suited to the makeup and diversity of their assets in order to assess real performance in response to this transformation. With an emphasis on evaluating intangible assets like intellectual capital, organizations have been using a variety of multidimensional performance evaluation approaches since the 1990s, including the BSC, Skandia Navigator, Prism of Performance, pyramid of performance, and Measurement Model of Performance Matrix.

Palozzi et al. established the Health Technology Balanced Assessment Framework, which blends the Balanced Scorecard with Health Technology Assessment (HTA), to enhance the management of health technology in hospital settings and promote strategic coordination. However, the lack of a clear instrumental framework makes it difficult to use BSC and HTA simultaneously. The research proposes a model that investigates the relationships between BSC components, AIS, DT, and SHRM. It also offers the tools required to integrate BSC and HTA. By providing an experimentally confirmed theoretical model, the study fills a vacuum in the healthcare literature and provides a crucial basis for improving the Balanced Scorecard. Thus, the purpose of this research is to examine how various aspects of organizational BSC performance are affected by DT, advancements in AIS, and SHRM, as well as the unintended consequences these factors may have on the long-term viability of healthcare institutions. The research strengthens the significance of the Balanced Scorecard in fostering SD by examining these causal links, with DT, improvements to the AIS, and optimization of SHRM acting as important input elements.

The results give hospital management the means to achieve sustainable growth by involving human resources in strategic processes and transforming digital and informational environments.

Review Of Literature:

Using BSC for Performance Assessment

The impact of production factors on organizational success is measured through performance evaluation. Enhancing performance in comparison to prior periods and similar organizations is the primary goal of performance reviews. Furthermore, research on the psychological effects of performance evaluation has highlighted the value of transformative criticism in promoting performance enhancement, with a focus on enhancing organizational capacities.

The Balanced Scorecard (BSC), according to Kaplan and Norton, is a managerial method that makes it easier for a company

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to implement its strategy. The BSC turns an organization's vision and strategy into a measurable representation by transforming performance indicators from a SHRM. This tool helps define strategic objectives more precisely and makes plan implementation easier.

Both financial and non-financial measures are balanced by the Balanced Scorecard, which covers elements like customers, internal business processes, and learning and organizational development practices. The BSC takes a balanced approach since it takes into account both financial and non-financial aspects. Organizational operations with strategic objectives are aided by BSC dimensions.

BSC is essential to strategy formulation and execution as well as organizational goal assessment because of its strategic performance evaluation capabilities. Researchers over the past 20 years have examined how top businesses in a variety of industries, such as the public or healthcare sectors, have used BSC.

Digital Transformation

Because digital innovations and technology increase accessibility, speed, transparency, innovativeness, and trust, they have a substantial influence on organizational performance in healthcare companies. By accelerating decision-making and decreasing mistakes, the degree of digital technology adoption determines the extent of digital transformation (DT) in operations. This significantly affects how decisions are made.

In DT, new digital technologies are integrated into a business model, organizational procedures are enhanced, the value creation chain is redesigned, and customer requirements are more effectively met. The successful execution of digital transformations requires more than just formulating a plan in the DT area, since the strategic integration and deployment of digital technology is a more comprehensive notion. The effectiveness of DT, however, depends on how well it integrates into organizational procedures and how well people adopt these technologies, since it is an organizational transformation rather than just a change in digital technology. Consequently, DT initiatives need to be related to AIS and coordinated with SHRM in order for them to fully fit into an organization's strategy. The BSC model seeks to do away with unnecessary tasks and close the gap between strategy and execution. Consequently, employing BSC would assist in putting a plan into practice in the field of DT. DT has a good impact on BSC dimensions, especially FD.

Accounting Information System

A healthcare facility's accounting information system (AIS) gathers, organizes, and generates financial and operational data. Accounting, financial, and managerial approaches are integrated with the capabilities of organizational information management software through AIS. Improved quality, quantity, and speed of information dissemination; increased adaptability to a constantly shifting economic environment; improved operational management; communication channel optimization; and more opportunities for external relationship building are just a few benefits that come from efficient and effective AIS. Organizations are presented with greater options for diversification due to their increased informational capabilities. **Ditkaew** asserts that AIS quality has a major impact on company success.

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Verboncu and Zalman demonstrate how BSC aspects may be measured using performance metrics for organizational efficacy and efficiency. As a result, accountable accounting information systems ought to gauge performance across the board rather than just financially. As a result, over time, firms' accounting information systems might advance to assess non-financial performance, promoting the long-term viability of the enterprise.

Strategic Human Resources Management

In the modern economy, human capital—which is especially important for healthcare organizations—represents intellectual capital made up of abilities, skills, and knowledge that may give a company a competitive edge.

SHRM primarily impacts two areas: the learning and development component within the BSC and the internal process dimension of an organization's organizational performance. Findikli et al. and Amer et al. provide examples of how SHRM may improve employee engagement and performance. Furthermore, the implementation of human resource strategies has a noteworthy and beneficial effect on the performance of a firm, influencing both its financial outcomes and customer relations. According to Amer et al., including healthcare personnel in BSC implementation might address the issue of employee resistance toward digital transformation and raise satisfaction levels. Amer et al. also discover that all BSC aspects will be improved when health professionals are involved in BSC implementation.

Impact of BSC on Sustainable Development

Every company must achieve both financial and non-financial success in order to meet its sustainable development goals. The goals of SD must be included in the organizational transformation paradigm through digital transformation. Because it evaluates non-financial performance as a component of sustainable performance, the BSC is a helpful tool for improving businesses' sustainable performance. Organizational growth and sustainable development are facilitated by the BSC. According to recent research, sustainable development and the balanced scorecard are highly integrated. A driving force behind improving sustainable development with regard to social and environmental challenges is non-financial indicators. The development and success of an organization depend heavily on learning and growth. Adopting the BSC is essential to ensuring the organization's sustainable growth since it uses financial indicators to represent the economic drivers and operational indicators to reflect the social and environmental drivers. It is essential to synchronize strategic management and sustainable development systems for optimal use of BSC.

Objectives:

1. To evaluate how BSC Dimensions are affected by Digital Transformation.
2. To examine the influence of Accounting information system upgrade on BSC.
3. To look into how BSC is affected by strategic human resource management.
4. To evaluate the contribution of BSC aspects to Sustainable Development.

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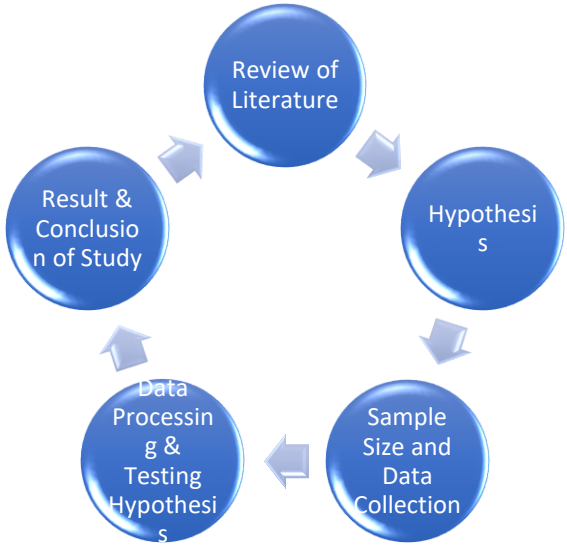
Hypothesis:

1. **H1:** It states that DT significantly improves BSC dimensions.
2. **H2:** The BSC dimensions are significantly improved by the AIS upgrade.
3. **H3:** The BSC dimensions are strongly positively impacted by the SHRM improvement.
4. **H4:** Sustainable development is significantly improved by BSC aspects.

Research Methodology And Designing:

Five rounds of research were conducted to determine how personnel with management experience in the healthcare industry saw sustainable development, the direct effects of DT, AIS, SHRM, SD on BSC dimensions.



The study's method of evaluating "employees' perception of management experience in the healthcare sector" was a survey based questionnaire. The stratified random sample approach was employed in the investigation. Gender and age were the two demographic factors that determined the layers' creation. The research population was made up of healthcare workers with prior managerial experience in the industry. The state of Haryana hosted the survey. Among the responders were staff members with backgrounds in doctors, nursing, and middle and upper management. The sample has a 95% confidence level and a 4.55% margin of error. The survey was emailed to 300 people in order to provide a sufficient sample size with a high level of confidence and a small margin of error. Out of the 300 participants, 209 returned the surveys filled out. Consequently, 209 correctly filled questionnaires are valid. Men make up 53.6% of the total responses, while women make up 46.4%. The age-based hierarchy looks like this: 10.5% of respondents are in the 18–24 age range, 68.4% are in the 25–35 age range, 14.4% are in the 35–44 age range, and 6.7% are above 45.

There are twenty-five questions in the questionnaire. Previous research on BSC dimensions, DT, AIS, SHRM, and SD served as the basis for the construction of the questionnaire items. The first section of the questionnaire had five questions that asked about demographics. The antecedent factors of digital transformation, sustainable development, BSC dimensions, AIS enhancement, and SHRM are covered in the sections that follow.

Table: 1 Questionnaire Design (own construction Google Form)

Variables	Item	Scale
Demographic Variable	Age Gender Position Experience	According to age with 5 different categories, Gender (Male & Female), Positions in

	Education	healthcare industry like Dr., nurse, admin staff etc., experience and level of education
DT	Digital Transformation	Very Low to Very High : 1 to 5
	Financial (Dt)	
	Customer (Dt)	
	Internalprocess (Dt)	
	Learning And Growth (Dt)	
AIS	Accounting Information System	
	Customer (Ais)	
	Internal Process (Ais)	
	Learning And Growth (Ais)	
SHRM	Sustainable Human Resource Management	
	Talent Acquisition And Retention (Shrm)	
	Employee Wellness Program (Shrm)	
	Performance Management System (Shrm)	
	Diversity Inclusion And Initiatives (Shrm)	
SD	Financial Metrics (Sd)	
	Customer Satisfaction Metrics (Sd)	
	Internal Process Efficiency Metrics (Sd)	
	Learning And Growth Metrics (Sd)	
BSC SD	Overall Satisfaction	

The survey consists of broad inquiries on the opinions of the employees; it excludes information that needs informed consent and an institutional review board. The measuring scales were created using the results of earlier studies. Within the model, the endogenous (latent) variables are DT, AIS, SHRM, and SD. Table 2 shows the descriptive statistics of the observable variables (questionnaire items).

Table: 2 Descriptive Statistics (Source: own construction Ibm Spss Statistics)

Content	Minimum	Maximum	Mean	Standard Deviation	Kurtosis	Skewness
Age	1.OO	4	2.188	0.698	1.36	0.985
Gender	1.OO	2	1.464	0.499	-1.998	0.145
Position	1.OO	5	2.598	1.05	-1.128	-0.262
Experience	1.OO	5	2.679	1.057	-0.134	0.867
Education	1.OO	5	2.718	0.934	-0.73	-0.33
Dt	1.OO	5	4.44	0.829	1.54	-1.384
Fin (Dt)	1.OO	5	4.431	0.921	1.789	-1.553
Cus (Dt)	1.OO	5	4.44	0.901	2.185	-1.621
Ip (Dt)	1.OO	5	4.493	0.87	2.354	-1.712
L & G (Dt)	1.OO	5	4.522	0.819	2.552	-1.702
Ais	1.OO	5	4.574	0.736	2.833	-1.748
Cust (Ais)	1.OO	5	4.545	0.858	3.033	-1.905
Ip (Ais)	1.OO	5	4.545	0.824	3.482	-1.931
L & G (Ais)	1.OO	5	4.584	0.748	2.744	-1.778
Shrm	1.OO	5	4.593	0.7	3.709	-1.854
Tar (Shrm)	1.OO	5	4.589	0.838	2.618	-1.907
Ewp (Shrm)	1.OO	5	4.512	0.902	3.058	-1.905
Pms (Shrm)	1.OO	5	4.589	0.826	3.613	-2.03
Dii(Shrm)	1.OO	5	4.603	0.77	2.971	-1.899
Fm (Sd)	1.OO	5	4.541	0.875	2.268	-1.81
Csm (Sd)	1.OO	5	4.474	0.886	2.88	-1.79
Ipem (Sd)	1.OO	5	4.531	0.891	3.838	-2.034
Lgm (Sd)	1.OO	5	4.56	0.829	3.523	-1.971

The central tendency, variability, and distribution features of the variables in Table 1 are shown by descriptive statistics. The age variable, in particular, shows a moderate level of variability with a mean of 2.188 and a deviation of standard of 0.698. Gender indicates less variability, with a mean of 1.464 and a comparatively low deviation of standard of 0.499. With a mean of 2.598, position has a wider range from 1 to 5, indicating variation in positions. Domain-specific variables, such DT, FIN (DT), and CUS (DT), exhibit a steady trend toward the upper limit with high mean values around 4.44. The distribution shape may be understood by looking at the skewness and kurtosis values. For example, a leftward skew is suggested by a negative skewness in gender and a rightward skew in

age. All things considered, these statistics help with the dataset's interpretation by offering a succinct synopsis of each variable's salient features. The study tested research ideas through the use of structural equation modelling. By using structural equation modelling, one may evaluate the connections between the latent variables in the model.

Result:

The optimum method for evaluating the four hypotheses is to utilize the Smart PLS v4.0 software, which supports structural equation modelling. The PLS method is used with a reflective model. The model is subjected to bootstrapping technique for the path coefficient. As an example of the empirical model, see Fig. 3.

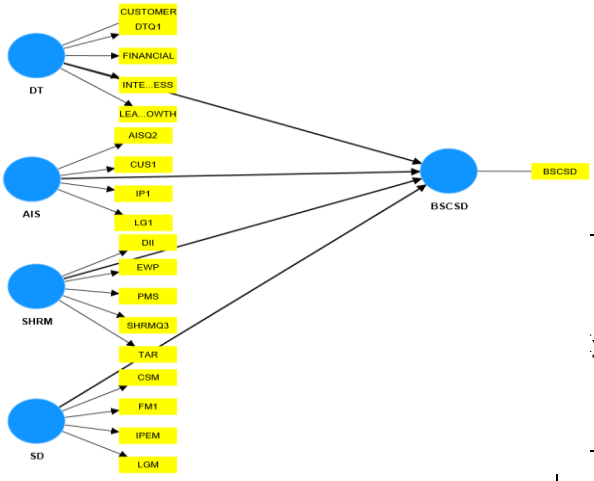


Fig: Model based on empirical data. Source: self-made using Smart PLS v4.0

With average variance extracted over 0.82, composite reliability over 0.92, and Cronbach's alpha above 0.95, Table 3 demonstrates the exceptional reliability and validity of the variables. Moreover, values over 0.9 (0.906) for the normalized fit index (NFI) and below 0.08 (0.075) for the standardized root mean squared residual (SRMR) indicate a solid fit for the model.

Table:3 Validity and Reliability (Source: self-made using Smart PLS v4.0)

	Cronbach's Alpha	Composite Reliability	Average
DT	0.953	0.958	0.845
AIS	0.949	0.949	8.868
SHRM	0.955	0.957	0.850
SD	0.961	0.962	0.895
BSC	0.900	0.929	0.770

The paper used a bootstrapping technique with 300 subsamples at a significance threshold of 0.05 to assess research hypotheses. Values larger than 2.5 for T statistics and less than 0.005 for p values suggest that the route coefficients are more significant. Route coefficients that show the direct positive impacts between the model variables are shown in Table 4.

Table:4 Path Coefficient (Source: self-made using Smart PLS v4.0)

ypothesis	Path	Original Sample (O)	T Statistics (|O/Stdev|)	P Values	Validation
H1	Data Transformation	0.190	14.273	0.000	Validated
	Financial (Dt)	0.224	27.322	0.000	
	Customer (Dt)	0.239	24.810	0.000	
	Internal process (Dt)	0.217	25.675	0.000	
	Learning And	0.216	24.210	0.000	

	Growth (Dt)				
H2	Accounting Information System	0.286	18.804	0.000	Validated
	Customer (Ais)	0.268	34.993	0.000	
	Internal Process (Ais)	0.263	37.379	0.000	
	Learning And Growth (Ais)	0.259	38.284	0.000	
H3	Sustainable Human Resource Management	0.207	17.089	0.000	Validated
	Talent Acquisition And Retention (Shrm)	0.209	24.382	0.000	
	Employee Wellness Program (Shrm)	0.218	29.902	0.000	
	Performance Management System (Shrm)	0.227	29.004	0.000	
	Diversity Inclusion And Initiatives (Shrm)	0.223	29.835	0.000	
H4	Financial Metrics (Sd)	0.274	31.516	0.000	Validated
	Customer Satisfaction Metrics (Sd)	0.268	38.013	0.000	
	Internal Process Efficiency Metrics (Sd)	0.252	24.708	0.000	
	Learning And Growth Metrics (Sd)	0.263	39.041	0.000	

Table 4 demonstrates the validity of each of the four assumptions. The structural model's hypotheses are supported by Table 4. The following major data transformation impacts support hypothesis 1: internal process (DT) = 0.217, learning and growth (DT) = 0.216, finance (DT) = 0.224, and customer (DT) = 0.239. Positive accounting information system effects—customer (AIS) = 0.268, internal process (AIS) = 0.263, and learning and growth (AIS) = 0.259—validate hypothesis number two. According to Hypothesis 3, talent acquisition (SHRM) = 0.209, employee wellness (SHRM) = 0.218, performance management (SHRM) = 0.227, and diversity initiatives (SHRM) = 0.223 are all highly influenced by sustainable human resource management. The financial indicators customer satisfaction (SD) = 0.268, internal process efficiency (SD) = 0.252, and learning and growth metrics (SD) = 0.263 strongly support hypothesis 4. All things considered, the route coefficients with their corresponding values support the theoretical connections in the model.

The results show a strong correlation between the major variables. The Balanced

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Scorecard has a **78.5%** overall contribution to sustainable development in the healthcare industry. BSC measures—that is, measurements related to finances, customer happiness, internal process efficiency, and learning and growth—significantly enhanced sustainable development. Path coefficients, T statistics, and P-values—strong statistical evidence—all highlight how crucial these variables are in determining the success and sustainability of healthcare organizations.

Discussion:

The robust statistical support of the study highlights the critical functions of advanced accounting systems, digital transformation, strategic human resource management, and balanced scorecard metrics in determining the sustainability and profitability of healthcare organizations. It emphasizes the significance of utilizing new technology in healthcare and the transformational advantages of digital efforts on overall operational enhancement. The significance of effective data management and optimal financial operations in augmenting organizational performance is underscored by updates to accounting information systems. With thorough HR strategies having a favourable influence on internal operations, customer experiences, employee happiness, and organizational learning, strategic human resource management stands out as a critical component. The association between sustainability goals and organizational performance is shown by the positive correlation between BSC components and sustainable development metrics. This suggests that healthcare organizations should think about integrating sustainable development standards into employee performance evaluations. The study concludes with important implications for evidence-based decision-making by organizational leaders by highlighting the need for strategic investments in state-of-the-art systems and methodologies to improve overall performance and sustainability in the complex landscape of the modern healthcare sector.

Conclusion:

Conclusively, this research offers significant perspectives on the connections among digital transformation, upgrades to accounting information systems, strategic HRM, and SD indicators within healthcare industry. The findings show noteworthy benefits, emphasizing the need of adopting cutting-edge technology, streamlining financial procedures, and putting in place all-encompassing HR policies in order to improve organizational performance and sustainability. The study's findings contribute to the growing body of knowledge on the intricate dynamics that occur inside healthcare organizations. Adopting these fundamental principles can help direct strategic decision-making as the healthcare industry develops and promote a more robust and sustainable healthcare ecosystem. Nonetheless, it is imperative that both researchers and practitioners understand the limits of the study and the necessity of continuing research as well as adaptability to the changing healthcare environment. In summary, this study emphasizes how crucial it is to approach organizational management strategically and holistically in order to improve healthcare systems and the communities they serve.

Limitations:

- Cross-sectional Design: Restricts the investigation of causation; longer-term research may yield more profound understanding.

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- Self-Reported Data: Subject to bias; adding objective measurements might improve dependability.
- Limited Generalizability: Wider application is restricted by industry concentration.
- Unconsidered External Factors: Potential impacts were not taken into account; more contextual factors should be investigated in future studies.

Future Research:

Future studies should include qualitative techniques like interviews for deeper insights and longitudinal designs for more sophisticated investigation of causal linkages. Contextual influences may be identified through comparative research conducted in various healthcare settings. Examining possible moderating or mediating variables as well as the influence of organizational culture and leadership on these projects would provide to a more complete knowledge of the interplay between technology, human resources, and sustainability in healthcare companies.

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