*Article*

# Maximizing Organizational Performance: The Power of Intellectual Capital, Business Ethics, and Technological Change: Evidence from South Asian Countries

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**Abstract:** The objective of this research is to analyze the effect of determinants of Business ethics (HR management ethics, ethics in corporate governance, and ethics in sales & marketing) on the organizational performance of the high-tech industry. The study further examines the influence of multiple serial mediations of human, structural, structural, and relational capital on the connection between Business ethics and organizational performance. Additionally, this research examines how technological change moderates the relationship between Business ethics and organizational performance. Data was collected from the information technology sector in various cities of South Asian countries through structured questionnaires. PLS-SEM modeling was used via Smart-PLS 4.0 software for analysis. The hypothesized & modified measurement and structural model were validated using the HTMT matrix, Fornell-Larcker criterion, R-square values, f-square values, outer loading, construct reliability and validity, path coefficient analysis, Blindfolding and predictive relevance. The research results suggest that ethics in corporate governance, HR management ethics, and ethics in sales & marketing have a notable positive effect on business ethics, leading to a substantial and affirmative impact on the organizational performance of the high-tech industry. The findings further suggested that dimensions of intellectual capital (human capital, structural capital & relational capital) significantly moderate between exogenous and endogenous constructs. Moreover, technological change significantly & positively moderates the relationship between Business ethics and organizational performance of the high-tech industry. In conclusion, this research provides insights into how these variables interact and what potential mechanisms act upon them. Organizations can make informed decisions about improving their performance and ethical standards by understanding these relationships. This research offers substantial theoretical and managerial implications to the research scholars and industry practitioners.

**Keywords:** Business ethics; Organizational performance; Ethics in corporate governance; Ethics in sales & marketing; HR management ethics; Intellectual capital.

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## 1. Introduction

### *1.1 Background of the research*

Business ethics is a critical aspect of modern business practices that outlines the ethical behavior of organizations and individuals in the contemporary business world [1,2]. Ethical philosophies and beliefs guide business operations in several aspects, such as the conduct of employees, the treatment of customers and suppliers, and the influence of business activities on the environment and society [3,4]. Applying business ethics ensures that business practices are fair, just, and ethical and comply with legal and regulatory requirements. Business ethics also addresses ethical dilemmas and conflicts during business operations [5,6]. Numerous studies have found that companies prioritizing ethical behavior and social responsibility often experience benefits such as enhanced reputation, increased customer loyalty, and improved employee engagement and productivity [7,8]. Companies engaging in unethical practices may face serious repercussions, such as legal and reputational harm, decreased customer loyalty and trust, and higher staff turnover and apathy [9,10]. Business ethics is strongly connected to organizational performance, and organizations that prioritize ethical conduct can enjoy various benefits that bring long-term financial success and sustainability [11,12]. This research paper covers three essential aspects of business ethics: human resource management ethics, corporate governance ethics, and ethics in sales & marketing. HR management ethics involves treating employees respectfully and fairly, guaranteeing equal employment opportunities, and preventing discrimination/harassment [13,14]. Ethics in corporate governance regards the protocols and values that control the behavior of those in leadership roles inside a business [15,16]. It necessitates an obligation to transparency, accountability, and take reliable decision-making that reflects the benefits of all the stakeholders, including employees, shareholders, suppliers, vendors, buyers, and overall society [17,18]. Finally, ethics in sales & marketing relates to refraining from deceptive or misleading advertising tactics, respecting consumer confidentiality, and ensuring products/services are safe/high-quality [19,20].

The knowledge-based economy, like the high-tech information technology sector, has a supreme significance of intellectual capital for organizations as a source of competitive advantage [21,22]. Generally, intellectual capital describes an organization's intangible assets, which may include personnel's knowledge, skills, experience, and relationships with customers, suppliers, or other external stakeholders [23,24]. Previous research has shown an affirmative correlation between intellectual capital and the performance of the high-tech industry. However, the underlying mechanisms that drive this association are still poorly understood [25,26]. It has been suggested that the dimensions of intellectual capital, for instance, human capital (which covers an organization's employees' knowledge and capabilities), relational capital (covers the firm’s external value and partnerships) [27,28], and structural capital (signifies the organizational knowledge-based systems & processes) [29,30], act as mediators between dimensions of Business ethics and performance of high-tech industry [31,32]. However, previous research studies have examined the association between intellectual and organizational attainment. Only some research scholars have examined the mediation of human capital, structural capital & relational capital (dimensions of intellectual capital) [33,34]. Understanding how these dimensions mediate the association between dimensions of intellectual capital and the performance of industry can offer a deep understanding of high-tech firms that can influence their intellectual capital to achieve superior performance [35,36].

The relationship between technological change and business ethics has evolved as technology advances and new ethical issues emerge [37]. Historically, technological change has often led to new ethical considerations related to the impact on employees, customers, and society [38,39]. For example, introducing new technologies in the industrial revolution led to concerns about worker safety, child labor, and working conditions [40,41]. The internet's and digital technologies' growth in the late 20th century created new ethical considerations related to data privacy, cybersecurity, and online behavior [42]. As technology advances, new ethical considerations are emerging [43]. The growth of automation and AI has caused worries about job loss and its consequences for workers [44]. Exploiting data analytics and machine learning also presents ethical dilemmas regarding

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algorithms' utilization and biases in decision-making. To handle these issues, firms are now focused on ethical behavior, formulating codes of conduct and rules to guide their decisions. Professional bodies like the Association for Computing Machinery have also created ethical codes to direct tech pros' actions [38]. Governments have started recognizing the importance of ethics when working with technology [37]. For example, the General Data Protection Regulation in the EU was implemented to ensure citizens' privacy and require companies to get explicit approval for collecting and processing personal data [43].

*1.2 Problem statement of the research study*

This paper investigates the role of dimensions of Business ethics including HR management ethics, ethics in corporate governance, and ethics in sales & marketing, to boost the performance of the high-tech industry. The paper further analyzes the impact of multiple serial mediations of Business ethics, dimensions of intellectual capital (human capital, structural capital & relational capital) in an association between exogenous and endogenous constructs within the high-technology industry in South Asian countries (India, Pakistan & Bangladesh) The research question explored is: "To what extent do intellectual capital dimensions mediate the relationship between business ethics and organizational performance in the tech industry?", as well as if organizational capabilities, such as technological change, influence the connection between business ethics and innovation performance?

*1.3 Research questiins of the study*

Based on our research problem and prior literature, we have identified the following research questions:

How to do business ethics - such as ethics in HR management, corporate governance, sales, and marketing- impact innovation performance in the high-tech industry?

How does the mediating association of dimensions of intellectual capital (human capital, structural capital & relational capital) between Business ethics, determinants of Business ethics, and performance of high-tech industry acts as multiple serial mediators?

To what extent do intellectual capital dimensions mediate the relationship between business ethics and organizational performance in the high-tech industry?

How to do organizational capabilities like technological change moderate this relationship?

What are the significant theoretical & managerial implications for the performance of the high-tech industry, and how can they use their intellectual capital to improve their innovation performance?

*1.4 Research objectives of the study*

This paper examines the significance of ethical behavior in three facets of business ethics and its potential to enhance organizational performance. Specifically, we will analyze how ethical behavior in sales & marketing, corporate governance, and HR management can impact organizational performance. This research provides insights into the importance of ethical behavior in business and how it can contribute to the long-term sustainability of organizations [4]. Therefore, another objective of this research is to investigate the mediation of human capital, structural capital & relational capital (dimensions of intellectual capital) on the association between business ethics and the performance of high-tech organizations. Specifically, we examine how structural, human, and relational capital mediate the association between business ethics and the performance of the high-tech organization [31]. By doing so, we contribute to the existing literature on determinants of intellectual capital, Business ethics and its dimensions, and organizational performance. We also provide practical implications for organizations seeking to leverage their intellectual capital for competitive advantage. Another important aim of the undertaken study is to examine the moderation of technological change in an association between business ethics and organizational performance.

*1.5 Significance and novelty of the study*

The novelty and significance of this paper have several folds; for instance, this research explores the direct influence of Business ethics and its determinants (ethics in corporate governance, HR management ethics & ethics in sales & marketing) on the performance of the high-tech industry. Moreover, this research examines the multiple serial mediations of dimensions of intellectual capital (human capital, structural capital & relational capital) between exogenous and endogenous variables [29,31], the specific mechanisms that affect performance have yet to be thoroughly examined. The undertaken study contributes to the existing literature by exploring the mediating effect of human capital, structural capital & relational capital (dimensions of intellectual capital) in the relationship between Business ethics and the performance of the high-tech industry. The significance of this research paper is two-fold. First and foremost, the findings of this research provide useful direction to managers who want to improve their company's performance through innovation. By identifying these dimensions, managers can concentrate their efforts and resources on building and utilizing the precise characteristics and dimensions of intellectual capital that mediate the association between innovation and the performance of the high-tech industry. Second, by studying intellectual capital's function as a mediator between creativity and performance, the research may enhance the knowledge already available on the topic. It helps us comprehend the value of intellectual capital and its facets in the success of high-tech companies [45]. Ultimately, the undertaken study can provide a foundation for additional research in this field, advancing awareness and comprehension among academics and business professionals of the intricate connection between business ethics, intellectual property, and financial performance.

The rest of the paper comprised on distinctive parts 2) part two contained on review of the literature & formulation of hypotheses, and 3) part three discoursed the methodology of this article. However, 4) part four included results and data analysis, 5) part five comprised of discussions, 6) parts six contained on conclusion and theoretical & practical implications, and 7) part eight highlighted the current paper's limitations and suggested areas for future research scholars.

## 2. Review of previous literature and hypotheses formulation

*2.1 The theory underpinning – Theory of Intellectual Capital (IC)*

The theory of Intellectual Capital (IC) is a relevant theoretical framework for the current study based on the research questions and research problem. The Intellectual capital theory explains how an organization's knowledge, skills, and other intangible assets can support its value generation and competitive advantage [46,47,48]. The Intellectual capital theory can serve as a foundation for understanding the function of intangible assets in fostering innovation. The undertaken study evaluates the connection among human capital, structural capital & relational capital (dimensions of intellectual capital), and the innovative performance of high-tech industry [49,50]. The idea also highlights the significance of human capital development and knowledge management, both essential for encouraging innovation [51,52,53]. Intellectual capital (IC) theory emphasizes that knowledge, abilities, and skills are not merely personal [54,55].

*2.2. Business ethics*

Business ethics are the moral ideals and principles that direct people's and organizations' behavior in the business environment [4,11]. It entails the application of moral concepts and standards to various business operations, such as how employees behave, how suppliers and customers are treated, how private information is handled, and how business operations affect society and the environment [2,5]. Business ethics ensure that business practices are just, fair, and ethical while adhering to legal and regulatory obligations [3,7]. Additionally, it entails resolving ethical conundrums and conflicts that develop throughout business operations [8,56]. Honesty, integrity, fairness, respect for the law, and social responsibility are essential business ethics tenants [9]. Businesses with a solid reputation, more devoted customers, happier employees, and higher

productivity tend to prioritize business ethics [6,57]. Ethical business procedures lessen the risk of legal trouble and harm one's reputation by acting unethically [1,12].

*2.3 Business ethics and organizational performance*

An increasing corpus of research indicates a beneficial connection between organizational performance and corporate ethics [58,59]. Businesses prioritizing moral conduct and social responsibility frequently reap the rewards, including improved reputations, higher customer loyalty, improved staff engagement, and increased productivity [60,61]. By lowering the likelihood of facing legal and regulatory repercussions, minimizing harm to the company's brand, and fostering better connections with essential stakeholders like clients, employees, and investors, acting ethically can also help long-term financial success [62]. Ethical conduct can assist businesses in luring and keeping exceptional personnel dedicated to their vision and purpose and who share their beliefs [63,64]. Conversely, businesses that act unethically risk suffering negative repercussions, including reputational and legal harm, diminished consumer loyalty, increased staff disengagement, and lower customer loyalty [65,66]. Decreased shareholder value and financial losses can result from unethical activity [67,68]. Business ethics and organizational performance are intimately related, and organizations that prioritize ethical behavior will likely experience several advantages that can help them achieve sustainability and long-term financial success [69,70]. Hence, we outlined the hypothesis:

H1: Business ethics positively & significantly associated with organizational performance.

*2.4 Dimensions of Business ethics*

Several dimensions of business ethics are commonly recognized. These dimensions are often used to guide ethical decision-making in the business world and to promote ethical behavior within organizations [71]. Some critical dimensions of business ethics include, for instance, organizational and individual ethics, corporate governance ethics, HR management ethics, and ethics in sales & marketing, and ethics in corporate governance [72,73]. Overall, these dimensions of business ethics help ensure that organizations operate responsibly and ethically and contribute to the well-being of society as a whole [74]. However, in this research, we considered three types of ethical responsibilities, which are essential for Business ethics for instance, ethics in corporate governance, ethics in sales & marketing, and HR management ethics.

2.4.1 Human resource management ethic – HRE

HR management ethics signifies the moral values and principles which monitor the behavior of organizations and individuals in managing their employees [75]. It involves the application of ethical principles and standards to various aspects of the employment relationship, including selection, recruitment, training & development, employee retention, performance management, and compensation & management [76]. Some fundamental HR management ethics principles include fairness, equity, respect for diversity, privacy, and confidentiality [74,77]. Organizations prioritizing human resource management ethics typically enjoy a more engaged and productive workforce, lower employee turnover, and a more positive employer brand [73]. Ethical behavior in human resource management involves treating employees with respect, dignity, and fairness, providing equal employment opportunities to all, avoiding discrimination and harassment, protecting employee privacy and confidentiality, providing adequate training and development opportunities, and ensuring that compensation and benefits are fair and equitable [78,79]. Moreover, ethical human resource management entails honoring workers' rights to liberty of connection and collective negotiation and ensuring that they work in a safe and healthy workplace and have the opportunity to balance their personal and professional lives [80]. Human resource management ethics is crucial for developing a supportive workplace that encourages worker engagement, productivity, and satisfaction and supports the organization's sustainability and long-term success [13,81]. Thus, we framed the hypothesis:

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H2: HR management ethics are positively & significantly associated with Business ethics.

2.4.2 Ethics in corporate governance

Ethics in corporate governance refers to the beliefs and principles that direct the conduct of people and groups with authority within a firm [18,82]. It entails a dedication to openness, responsibility, and ethical policymaking, which deems the interest of all parties involved, containing shareholders, suppliers, clients, employees, and the larger society [17]. In order to foster trust among stakeholders and uphold a good reputation, corporate governance should be open to examination and transparent, with clear policies and procedures in place for decision-making, reporting, and communication [83]. Corporate executives must act in the organization's and its stakeholders' best interests and be accountable for their decisions [15]. It can all be part of setting performance targets and goals, outlining roles and duties, and establishing clear lines of authority [84]. Corporate decision-makers should interact with stakeholders to ascertain their requirements and concerns and to consider their preferences [16,85]. Business decision-makers should consider all stakeholders' interests and act according to ethical standards and beliefs. Business leaders should establish good standards for others and encourage an ethical workplace environment [86,87]. Thus, we framed the hypothesis:

H3: Ethics in corporate governance are positively & significantly associated with Business ethics.

2.4.3 Ethics in sales & marketing

Ethics are the beliefs and principles that direct the conduct of people and groups with authority within a firm's behavior in the sales and marketing sector [19,88]. It entails applying moral norms and guidelines to various sales and marketing activities, including advertising, promotions, pricing, and client interactions [20,89]. Some fundamental principles of ethics in sales and marketing include honesty, transparency, fairness, respect for privacy, and responsibility [90]. Organizations prioritizing ethics in sales and marketing typically enjoy a more substantial reputation, increased customer loyalty, and tremendous long-term success [91,92]. Ethical behavior in sales and marketing involves avoiding deceptive or misleading advertising, providing accurate and truthful information to customers, respecting customer privacy, avoiding unfair pricing practices, and ensuring that products and services are safe and of high quality [93]. Additionally, ethical sales and marketing involve avoiding exploiting vulnerable or disadvantaged groups, promoting responsible consumption, and ensuring marketing messages are consistent with the mission and values of the organization [20,94]. Thus, we framed the hypothesis:

H4: Ethics in sales & marketing are positively & significantly associated with Business ethics.

*2.5 Mediation – Dimensions of intellectual capital*

Intellectual capital signifies a firm's intangible resources contributing to its value and competitive advantage [21,26]. It comprises skills, experience, knowledge, and other intangible resources not reflected in formal financial statements. The commonly recognized determinants of intellectual capital (human capital, structural capital & relational capital) [95,96]. Overall, intellectual capital is significant because it represents a cause of sustainable and competitive long-term advantage for companies. Organizations can generate value and improve their performance over the long term by investing in managing & developing their intellectual capital [25].

2.5.1 Human capital – HC

Human capital signifies an organization's employees' skills, knowledge, and abilities. It includes factors such as education, training, work experience, creativity, and other intangible assets that contribute to an individual's ability to perform their job effectively [28,32]. Human capital is a crucial basis of long-term competitive advantage; human capital is crucial to an organization's overall intellectual capital [97]. A highly trained, knowledgeable, and adaptable workforce can be created inside an organization by investing in developing and managing its human capital [98]. Some key

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factors contributing to human capital development include: Formal education and on-the-job training can help employees acquire the skills & knowledge they need to accomplish their jobs efficiently [27]. Experience in a particular industry or job role can help employees develop specialized skills and knowledge highly valued by employers [95]. Creativity and innovation are essential factors in organizational success, and employees who possess these qualities can contribute significantly to an organization's intellectual capital [28]. A diverse workforce can bring various perspectives and experiences to an organization, which can help to foster innovation and creativity [25,32]. Thus, we framed the following hypothesis:

H5: Human capital significantly & positively mediates between business ethics and organizational performance.

2.5.2 Structural capital – SC

Structural capital signifies a firm's systems, processes, and intellectual property contributing to its value and competitive advantage [30,33]. It is one of the intellectual, human, and relational capital dimensions. Structural capital includes intangible assets not reflected in traditional financial statements [29,97]. Some examples of structural capital include, for instance, intellectual property, patents, trademarks, copyrights, and other legal protections that an organization has for its inventions, designs, and creative works [45,96]. The firm's culture comprises the beliefs, shared values, and behaviors that describe a firm and influence the behavior of its employees. Information systems include databases, knowledge management systems, and other technologies an organization uses to manage and share information [24,32]. Processes and procedures include the systems and protocols an organization uses to manage its operations, such as quality management systems, project management methodologies, and other standardized processes [31]. Brand reputation refers to people's perceptions and associations with an organization's brand and can be a powerful driver of competitive advantage [22,27]. Thus, we framed the following hypothesis:

H6: Structural capital significantly & positively mediates between business ethics and organizational performance.

2.5.3 Relational capital – RC

Relational capital signifies a firm's connections with its stakeholders, including customers, suppliers, partners, and other external stakeholders [30]. It is one of the three determinants of intellectual capital (including human & structural capital) [24,34]. Relational capital includes a range of intangible resources, which are not echoed in conventional financial statements. Some examples of relational capital include, for instance, Strong customer relationships are a crucial driver of business success. They can contribute to consumer loyalty, recurrent business, and expectant word-of-mouth recommendations [99]. Strong supplier relationships can help an organization secure reliable access to crucial resources and inputs and facilitate collaboration and innovation [31,36]. Partnerships can aid in developing new goods and services and help an organization increase its skills and reach. An organization's long-term success can be impacted by its reputation and brand image, which can increase stakeholders' trust and credibility [22,35]. An organization can lay the groundwork for a long-lasting competitive advantage and success by investing in the growth and maintenance of its relational capital [33,64]. Thus, we framed the following hypothesis:

H7: Relational capital significantly & positively mediates between business ethics and organizational performance.

2.5.4 Mediation and Multiple serial mediations of variables

Based on rigorous discussions, and preceding literature, we framed the following mediation hypotheses and multiple serial mediations of business ethics, structural capital, human capital, and relational capital on the association between exogenous variables and the performance of high-tech industry of South Asian economies.

2.5.5 Mediation of Business Ethics

H8(a): Business ethics mediates significantly between HR management ethics and organizational performance.

H8(b): Business ethics mediates significantly between ethics in corporate governance and organizational performance.

H8(c): Business ethics mediates significantly between ethics in sales & marketing and organizational performance.

2.5.6 Multiple serial Mediation of Business ethics and Human capital

H9(a): Business ethics and human capital mediate significantly between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(b): Business ethics and structural capital mediate significantly between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(c): Business ethics and relational capital mediate significantly between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(d): Business ethics, human capital, and structural capital mediate significantly between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(e): Business ethics, human capital, structural capital, and relational capital significantly mediate between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(f): Business ethics, structural capital, and relational capital significantly mediate between HR management ethics, corporate governance, ethics in sales & marketing, and organizational performance.

H9(g): Human capital, structural capital, and relational capital significantly mediate between Business ethics and organizational performance.

H9(h): Human and structural capital significantly mediate between Business ethics and organizational performance.

H9(i): Structural and relational capital significantly mediate between Business ethics and organizational performance.

*2.6 Technological change as a moderator*

Business ethics and organizational performance can be moderated by technological progress, which can modify how the relationship between the two is expressed [37,100]. Technological advancement can moderate the relationship between corporate morality and organizational effectiveness [101]. The ability of stakeholders to obtain information about a company's behavior has increased because of technological advancements, making it harder for businesses to hide unethical activity [40,43]. It may make corporate ethics even more crucial for preserving a good reputation and enhancing organizational effectiveness [102]. Technology has increased communication speed, allowing for faster dissemination of information and greater public scrutiny of business practices [39,44]. It can make it more challenging for companies to hide immoral behavior and can increase the importance of maintaining ethical standards in order to avoid negative publicity [41]. Automation and other technological advances can change the nature of work and the responsibilities of employees, which can impact the ethical considerations that must be considered [42]. Companies prioritizing business ethics in this context may be better positioned to manage the ethical implications of technological change and maintain solid organizational performance. Technological advances have also created new ethical considerations around data privacy and security [38,43]. Hence, we framed the hypothesis as follows:

H10: Technological change significantly and positively moderates business ethics and organizational performance.

*2.7 Conceptual Framework of the Study*

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This research proposed a novel conceptual framework based on philosophical theory and previous literature. The researchers have derived the items of the constructs from the previous literature [15,17,19,20,28,30,31,33,37,43,65,72,73,80,91,93,97]. Moreover, the researchers have derived the proposed relationship based on previous studies. Figure 1 is the proposed and modified conceptual framework of Business ethics, its determinants (HRM ethics, ethics in corporate governance, ethics in sales & marketing), and organizational performance. Moreover, the proposed conceptual framework also derived the mediation & multiple serial mediations of dimensions of intellectual capital (human, structural & relational capital) between ethics and organizational performance. Finally, the proposed conceptual frame also depicted the moderation of technological change between Business ethics and organizational performance.

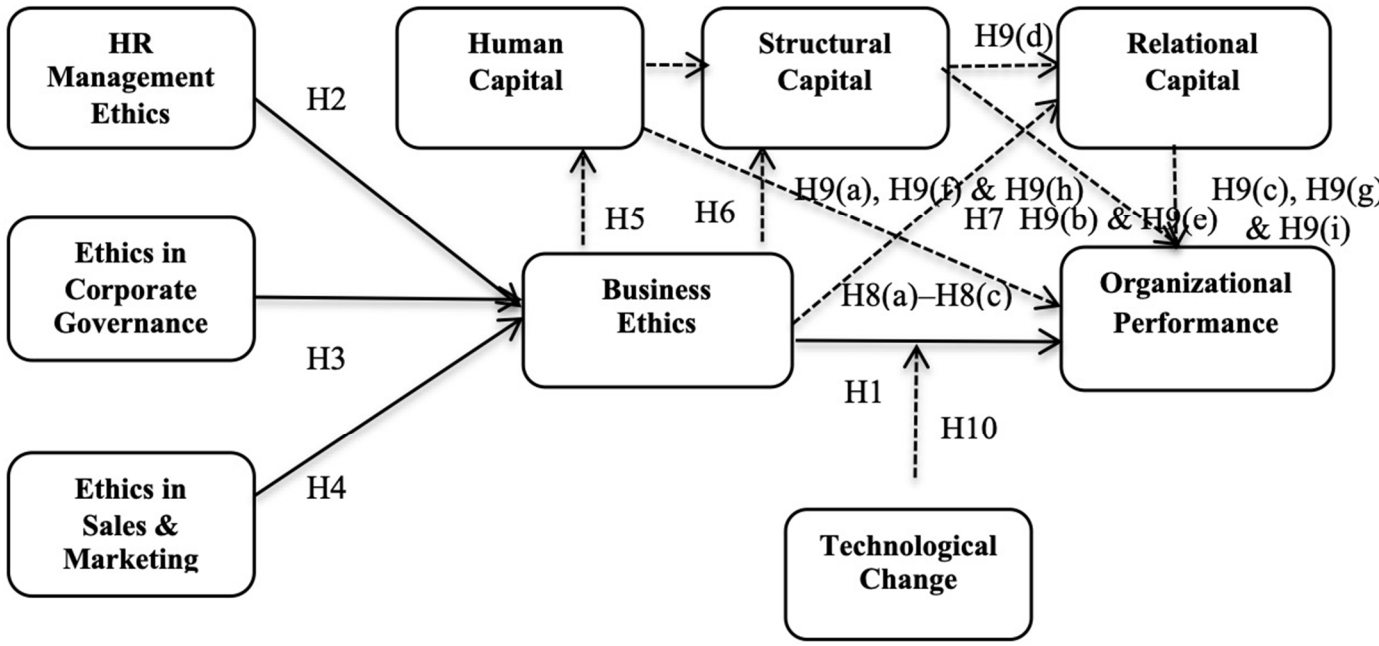


**Figure 1.** Conceptual framework of the study

Source: Previous Literature [15,17,19,20,28,30,31,33,37,43,65,72,73,80,91,93,97]

## 3. Materials and Methods

### *3.1 Research design of the study*

The quantitative research design of this paper involves collecting and analyzing numerical data using structured questionnaires [103]. The deductive approach was used to execute this research; for this purpose, we integrated the intellectual capital theory to derive a modified conceptual framework and questionnaire [104,105]. The survey was carried out to gather the dataset from employees (HR managers, higher management & policymakers) of selected high-tech information organizations in South Asian countries to measure the dimensions of intellectual capital (human, structural & relational capital) and their influence on organizational innovation & performance. The survey questions are designed based on the study's previous literature, theoretical framework, and research questions [106]. The research design follows ethical guidelines and obtains informed consent from the participants to ensure the confidentiality and anonymity of their responses [107].

### *3.2 Data collection method and sampling strategy*

The sampling strategy employed in the current study is a purposive sampling; specifically, the researchers recruited participants who met the inclusion criteria for the study from the high-tech industry of South Asian countries [108]. However, this sampling strategy has the advantage of being

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quick and easy to implement. Thus, it is significant to comprehend that the sample may not represent the broader population of employees who have experienced workplace incivility. Therefore, care should be taken when generalizing the outcomes of this study to other contexts or populations [109,110]. The data was collected from the high-tech industrial cities of India, Pakistan, and Bangladesh, for instance, India (Bangalore, Hyderabad & Pune), Pakistan (Karachi, Lahore & Islamabad), and Bangladesh (Dhaka, Chittagong & Sylhet). We have selected the HR managers and policymakers of diverse technology companies. The data was collected in-person and online (through personal emails & LinkedIn). We collected a total of 490 responses, in which we found 474 respondents were comprehensive and thoroughly answered every question [111,112]. Therefore, the sample size was 474 from this high-tech industry, which includes renowned high-tech diverse technology companies in South Asian countries. The data was collected from March 2022 to November 2022. An enormous amount of time was required to contact and collect their responses from high-tech organizations across urban centers of South Asian countries (India, Pakistan & Bangladesh).

### *3.3 Measurement scaling*

We used a structured questionnaire with a five-point Likert scale; Annexure I comprised demographic questions, for instance, age, gender, marital status, education, experience, and income—however, Annexure II of the questionnaire comprised constructs and their indicators (measurement scales). The measurement scales were carefully modified according to the nature & objectives of the study and high-tech industry requirements. The modified measurement scales were taken from the previous literature, for instance, indicators for the determinants of Business ethics, such as ethics in corporate governance [15,17,18], HR management ethics [14,72,73,80], and ethics in sales & marketing [19,20,91,93] were obtained from the preceding literature. The modified indicators of organizational performance were taken from [60,61,65]. The modified items of intellectual capital's determinants, for instance, human capital [28,32,97], relational capital [30,35,36], and structural capital [29,31,33], were extracted from the previous studies. Finally, the adapted indicators of moderating variable (technological change) were obtained from preceding studies, for instance, Ribeiro-Navarrete et al. [37], Saura et al. [38], and Kim & Scheller-Wolf [43].

### *3.4 Estimation techniques*

We employed PLS-SEM (partial least square-structural equation modeling) to analyze the dataset for this study. Several estimation techniques can be used in PLS-SEM modeling [104,113]. The two most common techniques we used in this research included Ordinary least squares (OLS) estimation: This technique is commonly used in linear regression models, where the aim is to minimize the sum of the squared residuals [114,115]. In PLS-SEM, OLS estimation is used to examine the outer model parameters [116], such as factor loadings, indicator weight, reliabilities, convergent & discriminant validities, HTMT matrix, and Fornell-Larcker criterion. 2) PLS-estimation technique is employed to estimate the inner model (structural model) parameters [117], such as path coefficients, f-square and R-square values, Blindfolding of predictive relevance, and model fitness analysis. PLS estimation is based on a series of iterative calculations that maximize the covariance between the latent variables in the model [105,111].

### *3.5 Demographic analysis*

The demographic statistics of the respondents exhibited that out of 474 individuals, there were 351(74.05%) males and 123(25.94%) females. Respondent's education demonstrated that 392(82.70) individuals have Bachelor's degrees in IT or engineering in computer science. However, the rest of the 82(17.29%) individuals have a post-graduate degree in IT or engineering in computer science. Regarding experience, 85% of respondents have more than five years of experience, and the rest of the 15% have less than five years of experience. The average salary range of considered respondents

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was $2000 per month or $24000 US dollars. The age bracket of considered respondents was 30–45 years.

## 4. Results

### *4.1 Measurement model*

The measurement model was endorsed through PLS-SEM, and OLS estimation, which is used to examine the outer model (measurement model) parameters, such as factor loadings, indicator weight, reliabilities, convergent and discriminant validities, HTMT, and Fornell-Larcker criterion [104,105,115].

#### 4.2.1 Outer loading and convergent validity

Table 1 and Figure 2 show different items' outer loadings and their convergent validity. Outer loadings refer to the correlation between a construct and its related item or indicator in a measurement model. In Table 2, each item is related to one or more constructs, and the outer loadings reflect the strength of these relationships. Convergent validity, on the other hand, is a measure of the degree to which different items measuring the same construct are associated with each other [104,118]. It is commonly measured by calculating the AVE, which should be above 0.5 to indicate good convergent validity [119]. Therefore, based on the outer loading in Table 1 and Figure 2, we can see that most items have strong relationships with their corresponding constructs, with values generally above 0.7. The value is considered suitable for the items of their respective variables [111,120]. Regarding convergent validity, we cannot directly determine the AVE from Table 1. However, the constructs will likely have good convergent validity because their related items have strong outer loadings [115]. However, more information is needed to assess the discriminant validity of the items and constructs, which is the extent to which they are distinct.

Table 1. Outer Loading Matrix

| Indicator | ECG | ESM | HRE | HC | OP | RC | SC | TC |
|---|---|---|---|---|---|---|---|---|
| ECG1 | 0.852 | | | | | | | |
| ECG2 | 0.723 | | | | | | | |
| ECG3 | 0.821 | | | | | | | |
| ESM1 | | 0.831 | | | | | | |
| ESM2 | | 0.714 | | | | | | |
| ESM3 | | 0.892 | | | | | | |
| ESM4 | | 0.763 | | | | | | |
| ESM5 | | 0.906 | | | | | | |
| HRE1 | | | 0.815 | | | | | |
| HRE2 | | | 0.864 | | | | | |
| HRE3 | | | 0.773 | | | | | |
| HRE4 | | | 0.680 | | | | | |
| HRE5 | | | 0.755 | | | | | |
| HC1 | | | | 0.900 | | | | |
| HC2 | | | | 0.760 | | | | |
| HC3 | | | | 0.878 | | | | |
| HC4 | | | | 0.755 | | | | |
| OP1 | | | | | 0.948 | | | |
| OP2 | | | | | 0.844 | | | |
| OP3 | | | | | 0.755 | | | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OP4 | | | | | 0.944 | | | |
| OP5 | | | | | 0.937 | | | |
| OP6 | | | | | 0.606 | | | |
| RC1 | | | | | | 0.750 | | |
| RC2 | | | | | | 0.728 | | |
| RC3 | | | | | | 0.750 | | |
| RC4 | | | | | | 0.725 | | |
| RC5 | | | | | | 0.784 | | |
| RC6 | | | | | | 0.818 | | |
| SC1 | | | | | | | 0.834 | |
| SC2 | | | | | | | 0.782 | |
| SC3 | | | | | | | 0.723 | |
| TC1 | | | | | | | | 0.780 |
| TC2 | | | | | | | | 0.800 |
| TC3 | | | | | | | | 0.854 |
| TC4 | | | | | | | | 0.858 |

Note: HRE: Human resource management; ECG: Ethics in corporate governance; ESM: Ethics in sales & marketing; BE: Business ethics; HC: Human capital; SC: Structural capital; RC: Relational capital; TC: Technological change; OP: Organizational performance.

4.2.2 Construct reliability and validity.

Table 2 shows the reliability and validity of constructs, and Cronbach's alpha is a degree of internal consistency [121. The findings of Table 2 exhibited that readings of Cronbach's alpha are higher than 0.70, which is generally acceptable. Composite reliability (rho_a and rho_c) are reliability measures that consider both the standard and unique variance in the items. All constructs have rho_a and rho_c values above 0.70, which is also considered acceptable [104,105]. The AVE measures convergent validity, indicating how a factor relates to its items. Table 2 and Figure 2 show that readings of AVE are higher than 0.70; thus, it has established convergent validity [119]. Thus, Table 3 indicates that all constructs in the model have acceptable levels of reliability and validity, suggesting that they measure what they are intended to measure.

Table 2. Construct reliability and validity

| Constructs | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | The average variance extracted (AVE) |
|---|---|---|---|---|
| Business Ethics | 0.943 | 0.949 | 0.950 | 0.598 |
| Ethics in Corporate Governance | 0.720 | 0.736 | 0.842 | 0.641 |
| Ethics in Sales & Marketing | 0.880 | 0.883 | 0.913 | 0.680 |
| HR Management Ethics | 0.875 | 0.883 | 0.909 | 0.666 |
| Human Capital | 0.841 | 0.843 | 0.895 | 0.682 |
| Organizational Performance | 0.917 | 0.940 | 0.938 | 0.720 |
| Relational Capital | 0.856 | 0.868 | 0.891 | 0.577 |
| Structural Capital | 0.679 | 0.687 | 0.824 | 0.610 |
| Technological Change | 0.849 | 0.883 | 0.894 | 0.679 |

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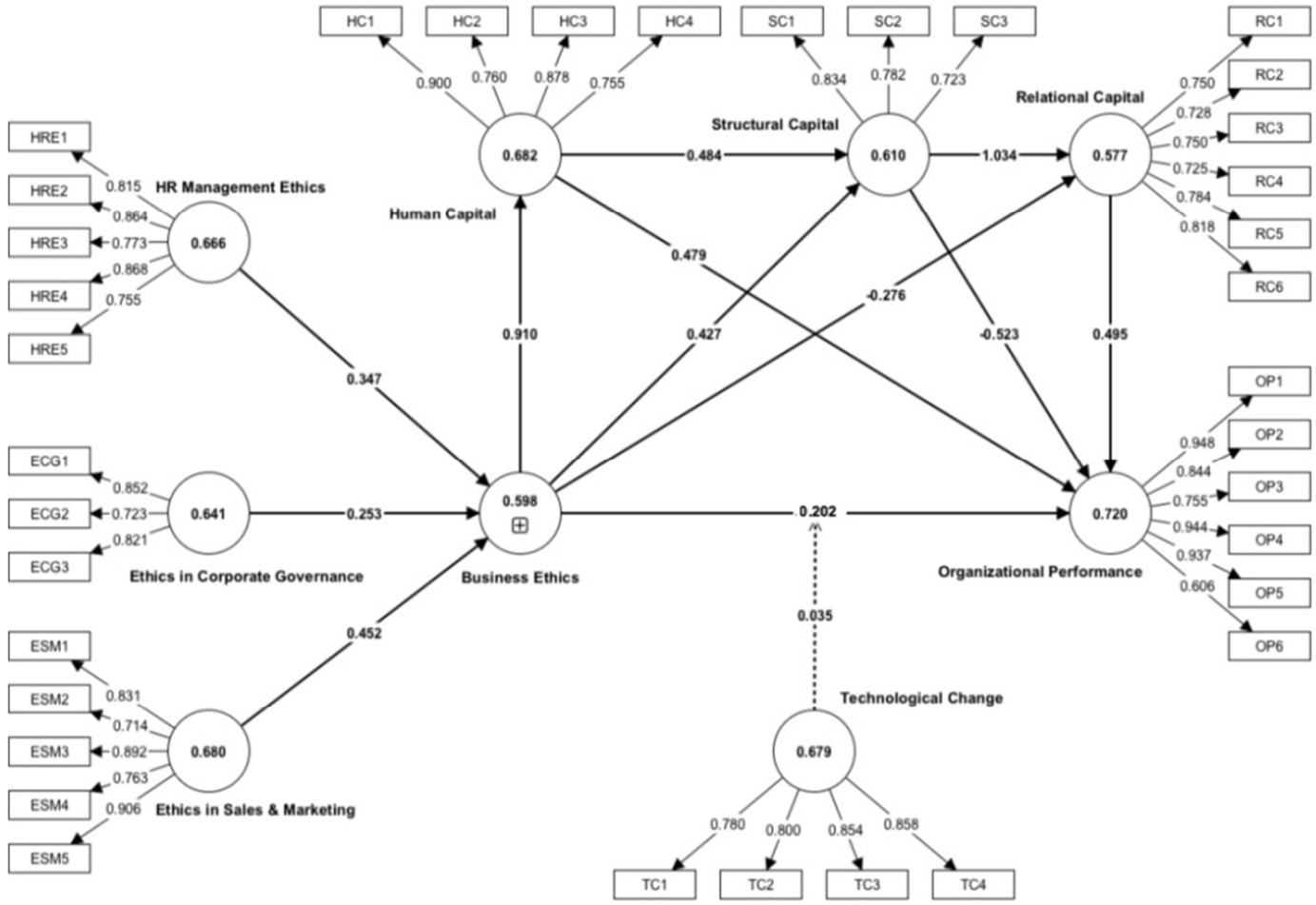


Figure 2. Measurement Model of the Study

4.2.3 HTMT matrix - Discriminant validity

Table 3 demonstrates each pair of variables' heterotrait-monotrait (HTMT) ratio matrix. According to Henseler et al. [115], values less than 0.85 exhibit sufficient discriminant validity. However, the diagonal values are 1.0, indicating that each variable is wholly correlated [121]. Hence, Table 3 confirmed that the considered measurement model has satisfactory discriminant validity, and we did not find any evidence of variable redundancy [114].

Table 3. HTMT – Heterotrait-monotrait ratio (HTMT) - Matrix

| Constructs | BE | ECG | ESM | HRE | HC | OP | RC | SC | TC |
|---|---|---|---|---|---|---|---|---|---|
| Business Ethics | 1.000 | | | | | | | | |
| Ethics in Corporate Governance | 0.779 | 1.000 | | | | | | | |
| Ethics in Sales & Marketing | 0.806 | 0.790 | 1.000 | | | | | | |
| HR Management Ethics | 0.742 | 0.766 | 0.815 | 1.000 | | | | | |
| Human Capital | 0.802 | 0.838 | 0.757 | 0.783 | 1.000 | | | | |
| Organizational Performance | 0.694 | 0.756 | 0.695 | 0.666 | 0.823 | 1.000 | | | |
| Relational Capital | 0.665 | 0.717 | 0.693 | 0.614 | 0.812 | 0.817 | 1.000 | | |
| Structural Capital | 0.848 | 0.755 | 0.808 | 0.840 | 0.837 | 0.801 | 0.752 | 1.000 | |
| Technological Change | 0.839 | 0.825 | 0.802 | 0.840 | 0.809 | 0.764 | 0.781 | 0.785 | 1.000 |

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4.2.4 The Fornell-Larcker criterion

The Fornell-Larcker discriminant validity criterion is employed to examine the discriminant validity in PLS-SEM using Smart-PLS 4.0. It equates the correlations amid variables with the square root of each factor's AVE [111]. A construct is considered to have discriminant validity if the square root of its AVE is more significant than the correlation between that particular factor and any other construct. The findings of Table 4 demonstrated the AVE values on the diagonal and the correlations between constructs off-diagonal. Looking at Table 4, we can see that all of the AVE readings are more significant compared to their correlations with other factors, which signifies that all factors exhibited acceptable discriminant validity [119]. Hence, the Fornell-Larcker criterion suggests that all of the constructs in this research are distinct and have demonstrated binding discriminant validity.

Table 4. Fornell-Larcker Criterion of Discriminant Validity

| Constructs | BE | ECG | HRE | ESM | HC | OP | RC | SC | TC |
|---|---|---|---|---|---|---|---|---|---|
| Business Ethics | 0.773 | | | | | | | | |
| Ethics in Corporate Governance | 0.772 | 0.801 | | | | | | | |
| Ethics in HR | 0.637 | 0.719 | 0.816 | | | | | | |
| Ethics in Sales & Marketing | 0.750 | 0.787 | 0.792 | 0.825 | | | | | |
| Human Capital | 0.710 | 0.704 | 0.769 | 0.814 | 0.826 | | | | |
| Organizational Performance | 0.646 | 0.616 | 0.598 | 0.624 | 0.765 | 0.848 | | | |
| Rational Capital | 0.621 | 0.588 | 0.553 | 0.619 | 0.714 | 0.846 | 0.760 | | |
| Structural Capital | 0.668 | 0.738 | 0.749 | 0.773 | 0.673 | 0.665 | 0.795 | 0.781 | |
| Technological Change | 0.720 | 0.782 | 0.787 | 0.766 | 0.741 | 0.826 | 0.706 | 0.706 | 0.824 |

*4.3 Structural model*

For the endorsement of the structural model, we employed PLS estimation; this technique is employed to examine the inner model's parameters, such as R-squared values ($R^2$), path coefficients, Blindfolding of predictive relevance ($Q^2$), effect size ($f^2$), and model fitness analysis [111,121].

4.3.1 Coefficient of variation ($R^2$)

Table 5 and Figure 3 shows the coefficient of variation ($R^2$), demonstrating the regression model's goodness of fit for each dependent variable in the study. The $R^2$ values determine the proportion of variation on the dependent constructs exerted by the independent constructs included in the model. The higher the $R^2$, the better the model fits the data [111,115]. In Table 6, for example, the $R^2$ value for Business Ethics is 1.000, does mean the model describes 100% of the variation in Business Ethics. Business ethics is derived from the individual items of HRM ethics, ECG and ESM. Similarly, the R-square value for Human Capital is 0.828, which shows that the considered model describes 82.8% of the variation in Human Capital. Thus, the R-square demonstrated by Table 5 signifies information on how well the regression model fits the data for each dependent variable and helps to assess the overall potency and association amid regressors and outcome variables in the model.

Table 5. The coefficient of variation ($R^2$)

| Constructs | R-square | R-square adjusted |
|---|---|---|
| Business Ethics | 1.000 | 1.000 |
| Human Capital | 0.828 | 0.828 |
| Organizational Performance | 0.918 | 0.917 |
| Rational Capital | 0.650 | 0.648 |
| Structural Capital | 0.793 | 0.792 |

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4.3.2 F-square (effect size) statistics

The f-square Table 6 shows the individual effect size of regressors (columns) on each outcome variable (rows), with values greater than 1 indicating a substantial effect [115,121]. Table 6 concluded that Business Ethics strongly affects Human Capital, Organizational Performance, and Structural Capital, with f-square values of 4.828, 0.055, and 0.054, respectively. Ethics in Corporate governance has a powerful effect on Human Capital, with an f-square value of 22.283. Ethics in HR management has the most potent effect on Human Capital, with an f-square value of 73.131. Ethics in Sales & Marketing has the most substantial effect on Human Capital, with an f-square value of 171.421. The findings demonstrated that Human capital exerted an adequate influence on Structural capital and a negligible influence on Rational capital, with f-square values of 0.194 and 0.358, respectively. Organizational performance, structural & Rational capital, and Technological change exerted zero influence on any other variables in the model, as indicated by blank cells in Table 6.

Table 6. F-square Matrix (Effect size)

| Constructs | BE | ECG | HRE | ESM | HC | OP | RC | SC | TC |
|---|---|---|---|---|---|---|---|---|---|
| Business Ethics | | | | | 4.828 | 0.055 | 0.054 | 0.151 | |
| Ethics in Corporate Governance | 22.283 | | | | | | | | |
| HR Ethics | 73.131 | | | | | | | | |
| Ethics in Sales & Marketing | 171.421 | | | | | | | | |
| Human Capital | | | | | | 0.358 | | 0.194 | |
| Organizational Performance | | | | | | | | | |
| Rational Capital | | | | | | 0.633 | | | |
| Structural Capital | | | | | | 0.432 | 0.757 | | |
| Technological Change | | | | | | 0.978 | | | |

4.3.3 The hypothesized direct relationship

The findings of Table 7 and Figure 3 demonstrated the direct relationships between variables, which confirmed that Business ethics has a positive and cogent association with organizational performance (OP). Ethics in Corporate Governance, ethics in Sales & Marketing, and HR management ethics also demonstrated a cogent and affirmative association with Business ethics, with coefficients of $\beta$=0.252, $\beta$=0.432, and $\beta$=0.368, respectively, and T>±1.96 & P<0.05. It means that higher levels of ethics in these areas are associated with higher overall business ethics. Human Capital has a positive association with OP with $\beta$=0.459 and T>±1.96 & P<0.05. It infers that a more significant level of Human capital (e.g., employee knowledge, skills, and abilities) are associated with higher firm attainment. Similarly, the Relational capital also demonstrated an affirmative & significant association with OP, with a coefficient of $\beta$= 0.497, and T>±1.96 & P<0.05. It means that higher levels of relational capital (e.g., external buyers, suppliers, vendors, and other stakeholders) are linked with greater firm attainment (OP). Similarly, structural and relational capital significantly influence organizational performance with $\beta$ = 0.497 & $\beta$ =-0.528, p<0.05.

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Table 7. Hypothesized direct relationship

| Direct Relationship | Original sample ($\beta$) | Standard deviation | T statistics | P values |
|---|---|---|---|---|
| Business Ethics -> Organizational Performance | 0.163 | 0.066 | 2.484 | 0.013 |
| Ethics in Corporate Governance -> Business Ethics | 0.252 | 0.007 | 38.039 | 0.000 |
| Ethics in Sales & Marketing -> Business Ethics | 0.432 | 0.011 | 40.618 | 0.000 |
| HR Management Ethics -> Business Ethics | 0.368 | 0.009 | 39.666 | 0.000 |
| Human Capital -> Organizational Performance | 0.459 | 0.066 | 7.000 | 0.000 |
| Relational Capital -> Organizational Performance | 0.497 | 0.045 | 11.009 | 0.000 |
| Structural Capital -> Organizational Performance | -0.528 | 0.065 | 8.094 | 0.000 |

4.3.4 The Hypothesized Multiple Serial Mediations.

The outcome of Table 8 and Figure 3 exhibited simple and multiple serial mediations. The findings further demonstrated that human, structural, and relational capital significantly mediates between business ethics and organizational performance with $\beta$=0.416, $\beta$=-0.225 & $\beta$=-0.137, and P<0.05. The outcomes of multiple serial mediations demonstrated a significant mediation of HC and SC between business ethics and organizational performance with the coefficient of $\beta$=-0.238 and p<0.05. The multiple serial mediations showed that SC and RC effectively mediate between BE and OP with the coefficient of $\beta$=0.216 and p<0.05. Moreover, human, relational, and structural capital potently mediated between BE and OP with a coefficient of $\beta$=0.229 and P<0.05. Table 8 further demonstrated that business ethics and structural capital have a significant serial mediation between ethics in sales & marketing, HRM ethics & ethics in corporate governance, and organizational performance with the coefficients of $\beta$=0.094, $\beta$=0.099, $\beta$=0.058 respectively, and p<0.05. Results also demonstrated that business ethics, structural capital, and relational capital significantly mediate between HR management ethics, ethics in corporate governance & ethics in sales & marketing, and organizational performance with the coefficients of $\beta$=0.080, $\beta$=0.054, & $\beta$=0.094 respectively, and P<0.05. Table 8 further substantiated the multiple serial mediations of business ethics, HC, SC & RC between HRM ethics, ethics in corporate governance, and ethics in sales & marketing and organizational performance have a cogent impact with the coefficients of $\beta$=0.084, $\beta$=0.058 & $\beta$=0.099, and P<0.05. The details of multiple serial mediations of all the mediators (business ethics, HC, SC, RC) between exogenous variables, for instance, ethics in sales & marketing, HR management ethics, ethics in corporate governance & business ethics, and organizational performance are provided in Table 8 and Figure 3.

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Table 8. Hypothesized Multiple Serial Mediation

| Hypothesized Multiple Serial Mediation Relationship | Original sample ($\beta$) | Standard deviation | T statistics | P values |
|---|---|---|---|---|
| ESM -> BE -> SC -> OP | -0.097 | 0.017 | 5.552 | 0.000 |
| HRE -> BE -> SC -> RC -> OP | 0.080 | 0.016 | 4.967 | 0.000 |
| ESM -> BE -> HC -> SC -> RC -> OP | 0.099 | 0.020 | 4.949 | 0.000 |
| ESM -> BE -> HC -> OP | 0.180 | 0.026 | 6.802 | 0.000 |
| BE -> HC -> SC -> RC -> OP | 0.229 | 0.046 | 5.005 | 0.000 |
| BE -> HC -> OP | 0.416 | 0.061 | 6.864 | 0.000 |
| ECG -> BE -> RC -> OP | -0.034 | 0.010 | 3.403 | 0.001 |
| HRE -> BE -> HC -> OP | 0.153 | 0.022 | 6.867 | 0.000 |
| HRE -> BE -> SC -> OP | -0.083 | 0.015 | 5.451 | 0.000 |
| ECG -> BE -> SC -> OP | -0.057 | 0.010 | 5.571 | 0.000 |
| ECG -> BE -> HC -> SC -> OP | -0.060 | 0.013 | 4.506 | 0.000 |
| HRE -> BE -> RC -> OP | -0.050 | 0.015 | 3.367 | 0.001 |
| ECG -> BE -> HC -> SC -> RC -> OP | 0.058 | 0.012 | 4.914 | 0.000 |
| BE -> HC -> SC -> OP | -0.238 | 0.052 | 4.597 | 0.000 |
| HRE -> BE -> HC -> SC -> RC -> OP | 0.084 | 0.017 | 5.030 | 0.000 |
| ESM -> BE -> OP | -0.070 | 0.028 | 2.485 | 0.013 |
| BE -> SC -> OP | -0.225 | 0.040 | 5.552 | 0.000 |
| ECG -> BE -> HC -> OP | 0.105 | 0.016 | 6.724 | 0.000 |
| ESM -> BE -> SC -> RC -> OP | 0.094 | 0.018 | 5.099 | 0.000 |
| BE -> RC -> OP | -0.137 | 0.040 | 3.391 | 0.001 |
| HRE -> BE -> OP | -0.060 | 0.024 | 2.481 | 0.013 |
| ESM -> BE -> RC -> OP | -0.059 | 0.018 | 3.371 | 0.001 |
| ECG -> BE -> SC -> RC -> OP | 0.054 | 0.011 | 5.131 | 0.000 |
| BE -> SC -> RC -> OP | 0.216 | 0.043 | 5.089 | 0.000 |
| HRE -> BE -> HC -> SC -> OP | -0.087 | 0.019 | 4.653 | 0.000 |
| ESM -> BE -> HC -> SC -> OP | -0.103 | 0.023 | 4.549 | 0.000 |
| ECG -> BE -> OP | -0.041 | 0.017 | 2.478 | 0.013 |

4.3.5 Moderation of Technological Change

The outcomes of Figure 3 and Table 9 demonstrated that technological change has a significant & positive influence between business ethics and organizational performance. The effect of $\beta$=0.036 demonstrated an affirmative relationship between (business ethics (BE and performance of the high-tech organizations. Specifically, organizational performance tends to be higher when business ethics are high. The standard deviation of 0.013 provides information on the variability of the effect size in the sample. In this case, the standard deviation is relatively small, suggesting that the effect size is consistent across the sample. The resulting T statistic indicates that the observed effect size is 2.754 standard deviations away from the mean, which is statistically significant. The P value of 0.006 indicates that the probability of observing this effect size or more prominent by chance is very low. However, further analyses, such as assessing effect sizes and significance levels of the interaction effect, are needed to conclude the direction and strength of the moderation effect more precisely [121,122].

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Table 9. Hypothesized Moderation of Technological Change

| Moderation of Technological change | Original sample ($\beta$} | Standard deviation | T statistics | P values |
|---|---|---|---|---|
| Technological change x Business Ethics -> Organizational Performance | 0.036 | 0.013 | 2.754 | 0.006 |

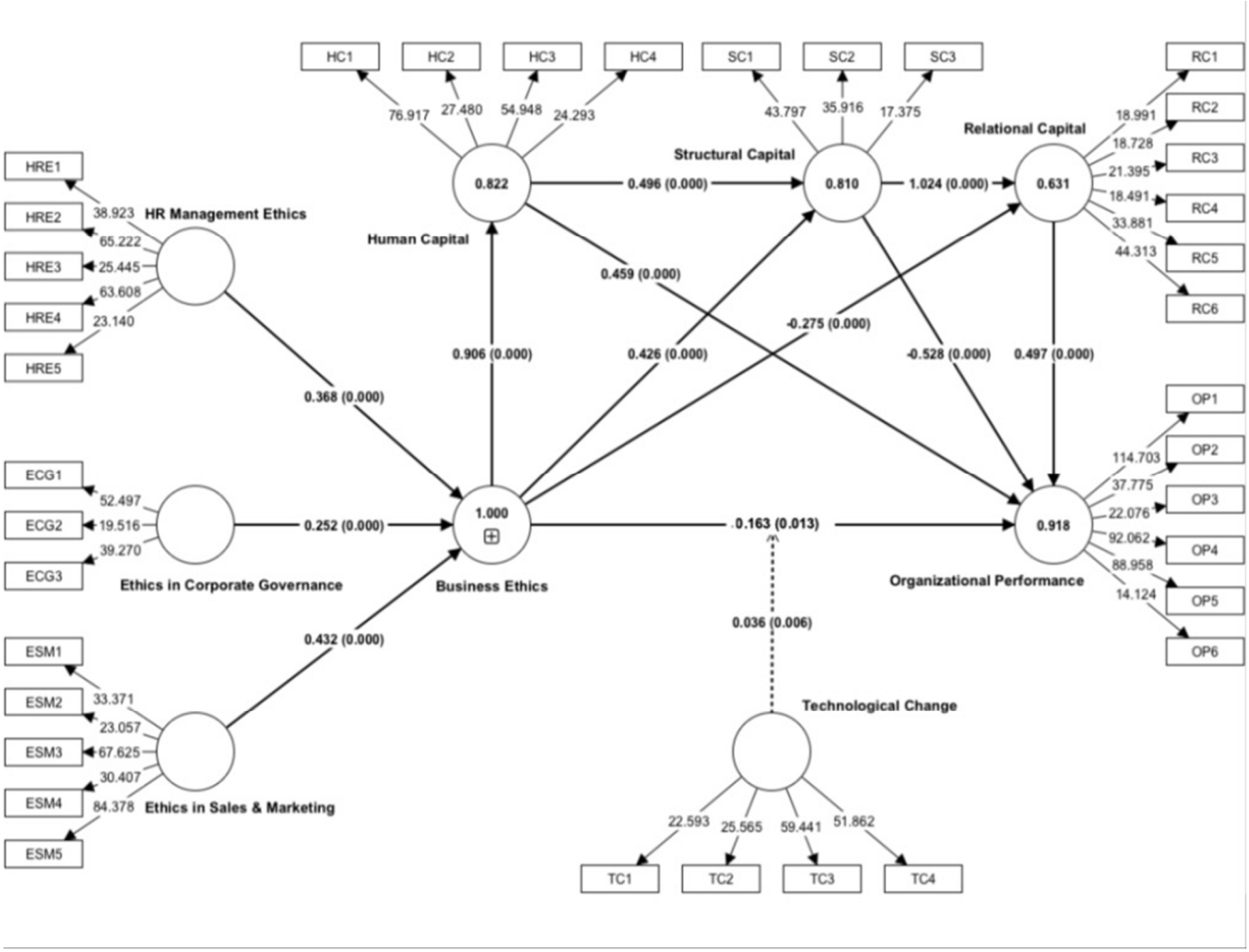


Figure 3. Structural Model of the Study

4.3.6 Graphical representation of moderation of technological change

The results of Figure 4 demonstrated that these values represent the conditional effect of the technological change (as moderator) in a relationship of independent and dependent variables at three different levels of the moderator [122]. When the technological change variable is at the mean level of +0.183 to -0.167, the conditional influence of the regressor on the outcome variable may be most potent. The association among exogenous and endogenous variables may be most robust when technological change is at average levels. Hence, these values suggested, that technological change moderates the association between Business ethics and organizational performance, with the strength of the relationship varying depending on the level of technological change present.

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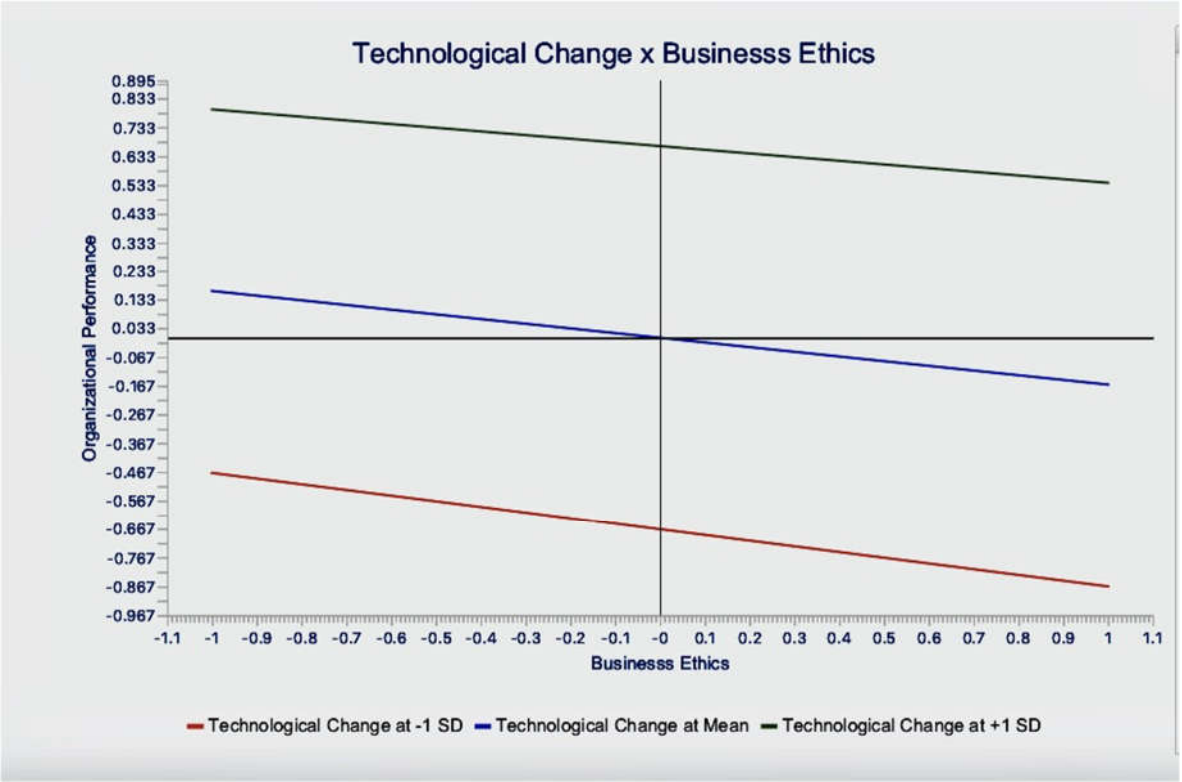


Figure 4. Conditional Effect of Technological Change

4.3.7 Blindfolding and Predictive Relevance ($Q^2$)

Table 10 demonstrates the outcomes of Blindfolding and Predictive Relevance ($Q^2$). In Table 10, SSO refers to the sum of squares explained by the factors (i.e., how much of the variation in the outcome can be attributed to each factor). SSE refers to the sum of squares unexplained by the factors (i.e., how much variation remains in the outcome after accounting for the factors). $Q^2$ is a measure of predictive relevance, calculated as 1 - SSE/SSO. $Q^2$ represents the proportion of the variation in the outcome that is accounted for by the factors and thus can be interpreted as a measure of how well the factors predict the outcome [104,115]. Table 10 demonstrates that the factors vary in their ability to predict the outcome. Organizational performance has the highest $Q^2$ value (0.616), indicating that it explains a large proportion of the variation in the outcome. Ethics in Sales & Marketing and Human Capital also have relatively high $Q^2$ values (0.518 and 0.466, respectively), suggesting they are good predictors. On the other hand, Structural Capital has a meager $Q^2$ value (0.240), indicating that it explains very little of the variation in the outcome. Corporate governance also has a relatively low $Q^2$ value (0.294), suggesting it may not be a powerful predictor.

Table 10. Blindfolding and Predictive Relevance (Q2)

| Factors | SSO | SSE | $Q^2$ (=1-SSE/SSO) |
|---|---|---|---|
| Business Ethics | 4511.000 | 2057.966 | 0.544 |
| Corporate Governance | 1041.000 | 734.908 | 0.294 |
| Ethics in Sales & Marketing | 1735.000 | 835.826 | 0.518 |
| HR Management Ethics | 1735.000 | 871.360 | 0.498 |
| Human Capital | 1388.000 | 741.411 | 0.466 |
| Organizational Performance | 2082.000 | 800.210 | 0.616 |
| Relational Capital | 2082.000 | 1232.689 | 0.408 |
| Structural Capital | 1041.000 | 790.969 | 0.240 |
| Technological Change | 1388.000 | 749.479 | 0.460 |

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4.3.8 Model fitness

Table 11 suggests that the lower values indicate a better model fit, and findings of the SRMR values described (0.049 vs. 0.054) that infers the estimated model is slightly better than the saturated model. The readings of d_ULS also substantiated the model fitness, and it is again validated that the estimated model is slightly better than the saturated model due to the lower value (27.967 vs. 28.963). However, the d_G value is not applicable in this case since it requires an assumption of multivariate normality, which needs to be met here. Finally, the NFI (Normed Fit Index) measures the amount of variation in the data accounted for through the model. Higher values indicate a better fit, and the Estimated model has a slightly better fit than the Saturated model (0.929 vs. 0.912). Hence, based on the fit indices provided, we might have inferred that the estimated model fixes the dataset slightly better than the saturated model. However, the Chi-square value cannot be used to compare the two models directly due to its infinite value for both models [111,115].

Table 11. Overall Model Fitness

| Fitness Indicators | Saturated model | Estimated model |
|---|---|---|
| SRMR | 0.054 | 0.049 |
| d_ULS | 28.963 | 27.967 |
| d_G | n/a | n/a |
| Chi-square | Infinite | Infinite |
| NFI | 0.912 | 0.929 |

**5. Discussions**

The study's results discuss the outer loading and convergent validity (CV), construct reliability and validity, discriminant validity (DV) through the HTMT matrix and Fornell-Larcker criterion, R-square values, and f-square values [104,105,111,115]. The outer loading results show that each item has strong relationships with its corresponding construct, and most values are above 0.7 [104,115]. The convergent validity results indicate good convergent validity as factor loading ranges between 0.606–0.948, and readings of AVE are more significant than 0.50 for all constructs [104,119]. The construct reliability and validity results indicate good ranks of validity and reliability for all constructs, with composite & Cronbach's alpha reliability readings higher than 0.70 [111,118]. The HTMT matrix outcomes indicate sufficient discriminant validity between constructs, as all HTMT values are below 0.85 [114,115]. The research findings suggested that Business ethics influences organizational performance, and the result is lined with the preceding literature [3,5,7]. The outcomes further exhibited that ethics in corporate governance exhibited a cogent and affirmative impact on organizational performance that is also coherent with the previous literature's outcomes [15,17,86]. The findings further described that the ethics in sales & marketing also significantly influence Business ethics. The outcomes of previous studies also confirmed that ethics in sales and marketing are crucial for any firm, which also increase the overall organizational ethics and performance [19,20,90]. Moreover, HR management ethics demonstrates that it significantly and positively impacts business ethics. Previous literature also supports the current study's findings [72,79,80]. The findings of this research further exhibited that dimensions of the mediator (intellectual capital), for instance, structural capital, human capital & relational capital, mediated significantly between exogenous and endogenous constructs [21,25]. The findings of HC, SC & RC mediation demonstrated a partial mediation between exogenous and endogenous variables. The previous literature also demonstrated similar results, which confirmed that intellectual capital dimensions significantly impact organizational performance [27,45,97,99]. The results of multiple serial mediations exhibited that Business ethics mediates significantly between exogenous variables (ethics in HR management, ethics in corporate governance & ethics in sales and marketing) and the outcome variable (OP). The outcomes of preceding studies also confirmed similar results [31,35,36]. The findings further demonstrated that human, structural, and relational capital mediates between BE and OP. Previous

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literature also confirmed that determinants of intellectual capital performed a significant mediating effect and enhanced the organizational performance with other exogenous variables [24,29,33]. The outcomes of multiple serial mediations demonstrated a significant mediation of HC & SC between business ethics outcome variable (OP). Similarly, structural and relational capital potently mediate between business ethics & outcome variable (OP). Moreover, human, relational, and structural capital also potently mediate the association of business ethics outcome construct (OP). These multiple serial mediation results are consistent with the previous literature [28,30,34]. Finally, the study exhibited that technological change affirmatively and potently moderates the association between business ethics and organizational performance. The previous literature also confirmed that technological change positively and significantly impacted business ethics and organizational performance [22,98]. Organizations can make informed decisions about improving their performance and ethical standards by understanding these relationships.

## 6. Conclusion and implications

The findings revealed that Business ethics strongly, Human capital, Structural capital & Relational capital played a vital role as mediators between exogenous constructs and Organizational performance. The study also found that ethics in Corporate governance, HR Management, and sales & marketing had an affirmative and cogent influence on Business ethics. The study concludes that technological change potently and affirmatively moderates the association between business ethics and organizational performance. The affirmative association between business ethics and organizational performance of the high-tech industry might be stronger or weaker depending on an organization's technological change level. The conditional impact of technological change on the association between the independent constructs (Business ethics) and the outcome variable (OP) may be most substantial when the technological change variable is at the mean level. The mediation and multiple serial mediations of human capital, structural capital, relational capital & Business ethics demonstrated a potent mediation between exogenous and endogenous variables. Thus, it shows that the intellectual capital of the high-tech industry plays a very vibrant role in organizational achievements. In terms of Blindfolding and Predictive Relevance, the factors vary in their ability to predict the outcome, with organizational performance, ethics in sales & marketing, and Human capital being good predictors, while Structural capital and Corporate governance being weaker predictors. The Predictive relevance values provide a valid starting point for identifying which factors may be most relevant to predicting the outcome of interest. The current research has offered numerous theoretical implications; firstly, the findings suggest that the association between Business ethics and outcome construct (OP) is moderated by technological change. It implies that managers need to be aware of the potential impact of technological change on the effectiveness of their business ethics programs. They may need to adapt their approach to business ethics to accounting for the changes brought about by technology to maintain or even enhance their organizational performance. The Blindfolding and predictive relevance exhibits the relative prominence of different constructs for organizational performance. To improve organizational performance, the senior managers and HR department can prioritize their efforts in different ethical areas, such as ethics in HR management, corporate governance, and sales & marketing. The undertaken study has provided numerous managerial implications to the senior management of the high-tech industry. Business ethics can positively impact organizational performance, mainly when technological change is average. Therefore, managers should prioritize ethical practices in their organizations, as they can lead to improved performance. The study highlights the importance of considering a technological change (as moderator) in an association of Business ethics and outcome construct (OP). Managers should be aware of the level of technological change present in their organizations and adjust their ethical practices accordingly. The Blindfolding and Predictive Relevance analysis provides insights into which factors are most relevant for predicting organizational performance. Managers should focus on strengthening the factors with high predictive relevance values, such as organizational performance, ethics in sales & marketing, and Human capital.

## 7. Constraints of the study and future directions to the researchers

The undertaken research has numerous constraints and limitations; for instance, this research has used a relatively small sample, a small regional sub-continent (India, Pakistan & Bangladesh). Therefore, the results may only be generalizable to some of the world's high-tech industries. Thus, it is highly recommended that future researchers take diverse and relevant regional economies like the United States, China, Japan, Canada, United Kingdoms, South Korea, Taiwan, Australia, and European Union economies for more robust outcomes. The current study is cross-sectional, with a particular limitation of causality between the constructs. Thus, future studies should be conducted as longitudinal designs to establish causality and examine how the relationships between the variables change over time. The current study has incorporated very few constructs; thus, future studies should use more constructs as exogenous, mediating, and moderating variables for more robust results. This research covered only three countries of the South Asian region and specific cities; therefore, the results cannot be generalizable for the entire world. Future studies should consider more countries and cities for robust results. Lastly, the current study does not explain the cause and effect between the constructs, therefore, it is also recommended to the future researchers to employ cause & effect models in their studies [123].

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