

RESEARCH ARTICLE

Enhance Firm Performance through HR Practices and Digital Transformation Impact on the Pharmaceutical Industry

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Abstract: The pharmaceutical industry's evolving landscape is shaped by digital transformation and progressive HR practices. The increasing adoption of digitalization has led to a shift towards flexible working arrangements, which significantly impacts employee productivity. This study aims to analyze the influence of firm performance through HR practices and the impact of digital transformation on the pharmaceutical industry. A structured data collection approach was implemented, surveying a sample of 150 HR professional working in the pharmaceutical industry. The Smart PLS software was utilized to analyze the data and validate the proposed hypotheses. These findings underscore the need for pharmaceutical firms to leverage digital transformation with effective HR strategies to enhance organizational performance. By integrating work policies, firm performance, and ensuring a supportive digital work environment, companies can drive higher productivity and employee satisfaction. Additionally, improved communication skills and strategic alignment in digital workplaces will be crucial in sustaining this transformation.

Keywords: Employee Productivity, Digital Transformation, Pharmaceutical Industry, HR Practices, Firm Performance

Introduction

Background of the Study

The pharmacy industry and the tasks of pharmacists are diversifying all the time, and employees can continuously develop their skills and become experts in various health-supporting services and products. The role of pharmacies in society is also changing, and pharmacies are increasingly being associated with providers of health-promoting services rather than simply treating diseases. Digitalization also brings new opportunities for pharmacy operations. A pharmacy license is personal and is always issued for certain locations, and only a pharmacist licensed in Pakistan can apply for a license (Sarkar & Garg, 2020). In 2017, pharmacy operations employed 8,620 people in Pakistan, including pharmacists, pharmacists, technical staff, and other employees, in addition to pharmacists who own pharmacies. This development work examines the needs and capabilities of Pakistani pharmacy staff for online training using the service design method. This development work is carried out for the target organization, which is one of the world's largest pharma companies. However, the results of the development work can also be utilized by other pharmacy companies

The pharmaceutical sector in Pakistan contributes more than one percent to the GDP and has approximately one percent share in the total exports. It saves more than USD two billion annually through import substitution and contributes some 4.2% to the largest manufacturing sector output. The sector is estimated to employ around 90,000 workers directly and 150,000 indirectly (Talib et al., 2013). As of 2024, the global pharmaceutical market size has surpassed \$1.5 trillion, with Pakistan contributing approximately 0.3% to this total. The pharmaceutical industry in Pakistan has grown significantly, with its total market size now estimated at PKR 700 billion. National companies dominate the market with a 70% share, while multinational corporations hold the remaining 30%. The top 25 companies account for 60% of the market, and the top 50 companies represent around 80% of the industry. The sector continues to grow at a steady

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rate of 12-15% annually, according to recent reports from the Pakistan Credit Rating Agency (PACRA). Currently, around 700 companies are operating in Pakistan's pharmaceutical sector, with multinationals making up less than 3% of the total, numbering around 35 (Unsworth et al., [2021](#)). The leading players in the industry, as per the latest Intercontinental Medical Statistics (IMS) Pharma Report, include:

- ▶ GlaxoSmithKline Pakistan Limited
- ▶ Getz Pharma (Private) Limited
- ▶ Sami Pharmaceutical (Private) Limited
- ▶ Abbott Laboratories (Pakistan) Limited
- ▶ High Q Pharmaceuticals
- ▶ Searle Company Limited
- ▶ Sanofi-Aventis Pakistan Limited
- ▶ Hilton Pharma (Private) Limited

The industry remains a vital component of Pakistan's economy, with increasing investments in local manufacturing, research, and development, as well as a growing focus on exports to regional and international markets.

Statement of the Problem

The purpose of the research development work is to describe the current state of workability management in the target organization from the perspective of HR and employees. The aim is to produce information on workability management in a private organization that provides special services in the Pharmaceutical sector and to influence the development of workability management in the target organization based on the research and development work part of the thesis. The aim of the research development work is not only to respond to the development of work ability management in the target organization, but also to act as a further research topic in work ability management and as a basis for development work for other organizations in the Pharmaceutical sector. In this research development work, senior management refers to service managers and higher-level personnel (Ishrat, [2012](#)).

Research Questions

- ▶ What is the impact of strategic HR practices on the creation of human capital in Karachi, Pakistan's pharmaceuticals industry?
- ▶ How is the relationship between strategic HR practices and business performance mediated by human capital?
- ▶ What effects does digital transformation have on pharmaceutical companies' performance?
- ▶ What impact do digital change and strategic HR procedures make together on pharmaceutical businesses' organizational performance?

Literature Review

Sales Skills in Pharmacies

In the pharmacy product market, companies would often want the pharmacy to specialize in the company's products and recommend a wide range of products to customers. At the same time, the pharmacy would like to sell, for example, cosmetics and toothpaste products to consumers so that the consumers would pick the products from the shelves themselves (Heikkila et al., [2016](#)). In this case, we usually talk about fast-moving consumer product markets, where consumers buy products quickly for everyday use. These markets are usually characterized by low prices for products and consumers' enthusiasm for comparing product features and innovations. It is very common that when consumers find their favorite product, they usually buy it routinely at a steady pace. Pharmacy products are also usually known for being sold to consumers through expert sales. Sometimes, pharmacies have the illusion that a product will sell itself, but this only happens with products that have become almost a norm in people's lives, such as milk or a cult product. For

other products, however, either a large marketing campaign is needed to ensure visibility, or the product must have a salesperson who uses their expertise to sell it to customers (Almaslamani et al., 2020).

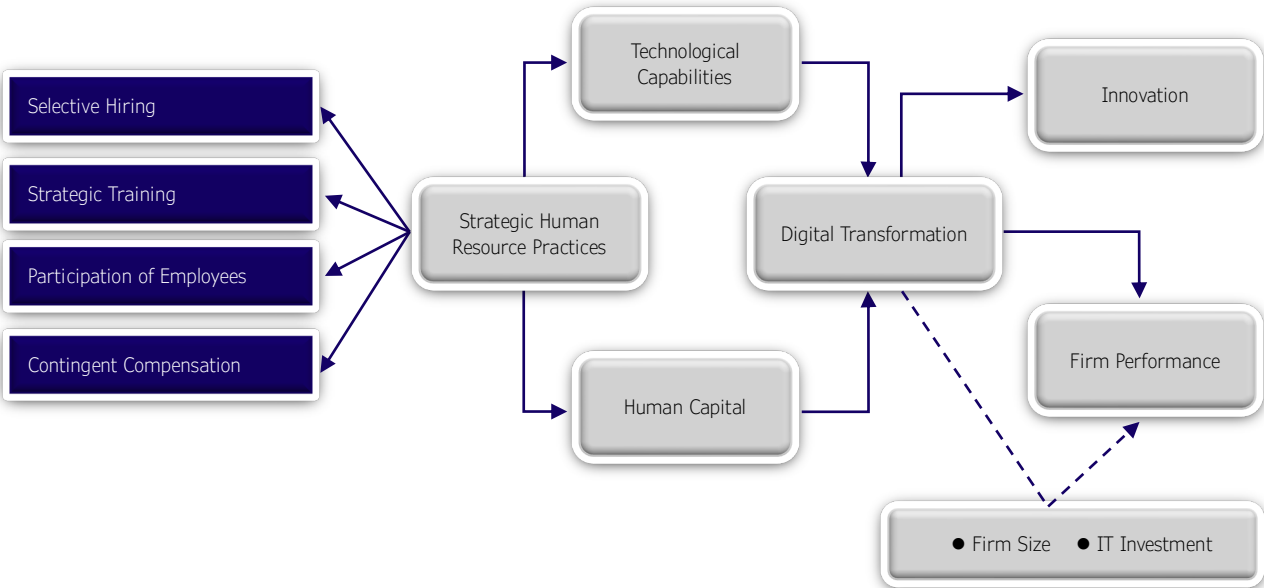
Mental Well-Being in the Work of HR as Part of Well-Being at Work

Mental health affects a person's ability to think, communicate, learn, and develop. In order for a person to be able to make a successful contribution to working life, a person needs perseverance and self-esteem. These can only be obtained through experiences of well-being. Mental well-being is part of well-being at work. Mental well-being in working life is affected by leadership and HR work, work tasks and skills, working conditions and equipment, and the work community and its members. Well-being at work is healthy, safe, and productive work carried out by skilled employees and work communities in a well-managed organization (Berman, 2012). The employee experiences their work as meaningful and rewarding and as supporting life management. Well-being at work essentially includes coping at work. As well-being increases, work productivity and commitment to work increase, and the number of sick leaves decreases. Well-being at work is a subjective experience of the state of well-being, which is influenced by the individual's workability and health, work, work context, and environment, as well as workplace relationships, management, and employer policy. Well-being at work is sensitive to changes and also depends on the rest of the individual's life and overall well-being (World Economic Forum, 2016).

Conceptual Framework

The conceptual framework for this study is designed to explore the impact of Human Resource (HR) practices and digital transformation on firm performance, with a specific focus on the mediating role of human capital. The framework integrates key variables such as selective hiring, strategic training, IT investment, firm size, technological capabilities, innovation, employee participation, and contingent compensation to provide a holistic understanding of how organizations can enhance performance in a digital era. HR practices, including selective hiring, strategic training, and participation of employees, play a critical role in shaping human capital. Selective hiring ensures that firms recruit the most competent individuals, while strategic training enhances employee skills, leading to improved firm performance (Kanyan et al., 2016).

Figure 1
Conceptual Framework



Hypothesis

- ▶ H1: Selective hiring has a positive impact on firm performance.
- ▶ H2: Strategic training enhances human capital development.

- ▶ H3: Strategic human resource practices positively influence digital transformation.
- ▶ H4: Digital transformation positively affects firm performance.
- ▶ H5: IT investment enhances technological capabilities.
- ▶ H6: Firm size moderates the relationship between digital transformation and firm performance.
- ▶ H7: Human capital mediates the relationship between strategic HR practices and firm performance.
- ▶ H8: Technological capabilities positively influence innovation.
- ▶ H9: Innovation enhances firm performance.
- ▶ H10: Employee participation positively impacts human capital.
- ▶ H11: Contingent compensation strengthens the relationship between human capital and firm performance.

Methodology

Research Approach

The deductive approach in methodology has been chosen for the current study plan because it involves a theory-driven approach to test the hypothesis with the help of empirical analysis and theory justification. The deductive approach encourages the replicability process to confirm the results, which is helpful not only in data collection with statistical support but also in increasing the authenticity of the concluding remarks. The approach is found helpful in using smart PLS software because it guides the researcher in focusing on validation by ensuring the specific observations and experiments in the application of the quantitative primary research paradigm.

Research Design

The quantitative research design was chosen to analyze the needs of the current study, which was found to support the evidence because it helped the researcher test the hypothesis and discuss the link between multiple variables (Asrar-ul-Haq & Kuchinke, [2016](#)). Keeping in view the role of the complex and multi-variable interactions, the researcher has chosen the link between the various variables by discussing the impact of one variable on the other. This is helpful for the researcher not only in choosing the relevant variables but also in seeing the link between the mediators for two kinds of variables. The research design helps the researcher in designing the survey instrument by exploring a validated scale while creating the survey process. Re-evaluating and organizing work management and supervision in the pharmaceutical industry in such a way that the practices are also suitable for HR practices and digital transformation can cause challenges in the transition to the industry.

Sampling Design

The sampling helps offer efficient resource use and makes sure that the targeted insights involve the subject of study in the correct sense (Tymon, [2013](#)). The specific population has been highlighted from the Pharmaceutical people because the Google survey form has been explored to collect the data from the samples. The sampling design has also supported targeting the rare populations where construct-specific knowledge has been required to extract the true data based on the inclusion and exclusion criteria. The design is also helpful in choosing a sample that is limited in size from a huge population because the sample size for the current plan is only 150. The researcher has chosen a sample size of 150 from the whole population of Pharmaceuticals available to the researcher for the collection of the data. The sample size was chosen with the help of minimum threshold processing to understand that irrelevant people were taken for the collection of the results and to make sure that accurate and meaningful results were obtained (Tuzovic et al., [2018](#)). Sampling techniques of probability and non-probability sampling are available to the researcher to collect the data from the relevant information based on the output of the respondents.

Sampling Instrument

The sampling instrument refers to the mechanism for data collection, which is explored to collect all the information and has been designed to collect the information from the relevant respondents. Various sampling instruments are available; however, the recent survey instrument is used to collect the data with the help of an open-ended questionnaire, which has been comprised of relevant questions based on the objectives of the study (Solnet et al., 2015). Smart PLS has been explored for statistical analysis because it is helpful for the researcher to explore the results in comparison of the variables and justify the approval or rejection of the hypotheses. The technique helps handle the small sample size of 150 only. The researcher has further assessed the measurement model for the discriminant validity convergent validity and reliability factors to find out the HTMT ratio in addition to average variance and Cronbach alpha. The process is helpful in the application of the structural models to explore the significance of P value and T values and see the impact of the variables in understanding the influence of the mediating variable.

Result and Discussion

Data Screening

The data has been collected from the respondents with the help of a Google survey form by considering the variables already outlined in the conceptual framework. This is helpful to the researcher in finding the answers to the specific questions by further dividing the questions into some relevant questions comprehensible to the respondents. The feedback of the respondents was obtained with the help of a Google survey form, which has already been converted automatically online into an Excel sheet. It is helpful to the researcher to continue the analysis process in the quantitative paradigm with the help of authentic software support. Smart PLS has been chosen for this purpose to analyse the data and screen the relevant information based on the Google survey forms output. Smart PLS has supported the researcher in collecting the data information supplied by the respondents. It contains production in a collaborative form, which has been aligned in a tabular shape so the software results automatically. A detailed analysis has been conducted here for path coefficient, outer loading, R square, R square adjustment, HTMT, Cronbach alpha, RHO an, and RHO c.

Table 1
Path Coefficient

	Original Sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P Values
DT -> FP	0.728	0.738	0.018	40.592	0.000
DT -> IN	0.819	0.824	0.016	50.115	0.000
HC -> DT	0.913	0.932	0.121	7.529	0.000
SHRP -> HC	0.699	0.707	0.024	29.528	0.000
SHRP -> TC	0.547	0.553	0.052	10.592	0.000
TC -> DT	-0.258	-0.275	0.149	1.729	0.084

Notes: SHRP: Strategic human resource practices, HC: Human Capital, DT: Digital Transformation, IN: Innovations, FP: Firm Performance.

Path coefficient has been outlined to compare the variance and discuss the results based on the data based on the data collected from respondents. It has been reviewed that the value of work-from-home practices for mental well-being has been found to have a P value greater than 0.05. This shows a collaboration where the results indicate a flexible process for following the work-from-home policy support and handling the reduction of stress due to the challenges of isolation and lack of clear boundaries for managing work from home and the personal life of an individual.

Table 2

Outer Loading

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	P values
DT 1 <- DT	0.880	0.878	0.021	41.394	0.000
DT 10 <- DT	0.939	0.938	0.012	81.599	0.000
DT 11 <- DT	0.862	0.861	0.029	29.304	0.000
DT 12 <- DT	0.937	0.935	0.009	102.678	0.000
DT 2 <- DT	0.750	0.748	0.040	18.830	0.000
DT 3 <- DT	0.443	0.447	0.115	3.861	0.000
DT 4 <- DT	0.258	0.251	0.098	2.640	0.008
DT 5 <- DT	0.379	0.376	0.077	4.909	0.000
DT 6 <- DT	0.395	0.386	0.114	3.458	0.001
DT 7 <- DT	0.235	0.224	0.145	1.617	0.106
DT 8 <- DT	0.587	0.576	0.106	5.550	0.000
DT 9 <- DT	0.866	0.866	0.014	61.191	0.000
FP 1 <- FP	0.899	0.891	0.036	24.920	0.000
FP 2 <- FP	0.403	0.405	0.081	4.980	0.000
FP 3 <- FP	0.687	0.676	0.061	11.350	0.000
FP 4 <- FP	0.739	0.733	0.041	17.842	0.000
FP 5 <- FP	0.729	0.732	0.038	18.932	0.000
HC 1 <- HC	0.922	0.921	0.012	79.709	0.000
HC 2 <- HC	0.740	0.739	0.028	26.687	0.000
HC 3 <- HC	0.746	0.744	0.027	28.066	0.000
HC 4 <- HC	0.907	0.905	0.015	62.145	0.000
HC 5 <- HC	0.852	0.853	0.019	45.585	0.000
IN 1 <- IN	0.823	0.821	0.030	27.335	0.000
IN 10 <- IN	0.711	0.708	0.039	18.037	0.000
IN 11 <- IN	0.879	0.880	0.022	40.012	0.000
IN 12 <- IN	0.850	0.852	0.025	33.708	0.000
IN 2 <- IN	0.923	0.923	0.011	82.607	0.000
IN 3 <- IN	0.707	0.708	0.053	13.295	0.000
IN 4 <- IN	0.470	0.466	0.074	6.323	0.000
IN 5 <- IN	0.476	0.472	0.067	7.107	0.000
IN 6 <- IN	0.728	0.723	0.045	16.144	0.000
IN 7 <- IN	0.865	0.862	0.028	30.436	0.000
IN 8 <- IN	-0.026	-0.022	0.096	0.273	0.785
IN 9 <- IN	0.285	0.285	0.103	2.772	0.006
SHRP 1 <- SHRP	0.448	0.440	0.090	5.002	0.000
SHRP 10 <- SHRP	0.760	0.759	0.041	18.328	0.000
SHRP 11 <- SHRP	0.658	0.657	0.048	13.600	0.000
SHRP 12 <- SHRP	0.850	0.850	0.024	35.723	0.000
SHRP 2 <- SHRP	0.650	0.654	0.029	22.520	0.000
SHRP 3 <- SHRP	0.767	0.759	0.055	13.889	0.000
SHRP 4 <- SHRP	0.764	0.763	0.035	21.863	0.000
SHRP 5 <- SHRP	0.416	0.416	0.095	4.373	0.000
SHRP 6 <- SHRP	0.619	0.615	0.074	8.408	0.000
SHRP 7 <- SHRP	0.322	0.322	0.075	4.302	0.000
SHRP 8 <- SHRP	0.725	0.716	0.059	12.269	0.000
SHRP 9 <- SHRP	0.764	0.762	0.030	25.451	0.000
TC 1 <- TC	0.944	0.945	0.009	99.783	0.000
TC 2 <- TC	0.923	0.918	0.023	40.782	0.000

The outer loading value has been reviewed for comparison director if it isn't more than 0.7 then it is contributing a construct for validity. It has been found that the outer loading value has been continuously less than 0.7. This is why a significant impact has been lacking for the variables while revealing the values based on the construct for variance.

Table 3
R Square

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	P values
DT	0.509	0.522	0.038	13.401	0.000
FP	0.530	0.544	0.027	19.935	0.000
HC	0.489	0.501	0.034	14.540	0.000
IN	0.671	0.679	0.027	24.947	0.000
TC	0.299	0.309	0.057	5.227	0.000

R square value shows the coefficient of determination where variance is dependent on some independent variables relationship. The value ranges from zero to 1, where the highest value is better for suggesting the relationship of positivity. The table shows that mental well-being has a threshold limit of about 0.16 and above. It is narrating a moderate explanatory power to a substantial explanatory power.

Table 4
R Square Adjusted

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	P values
DT	0.502	0.516	0.038	13.061	0.000
FP	0.527	0.541	0.027	19.693	0.000
HC	0.485	0.498	0.034	14.348	0.000
IN	0.669	0.677	0.027	24.707	0.000
TC	0.294	0.304	0.058	5.114	0.000

The R square variance value has been provided in the table which narrates the explanation for the dependent variable in comparison to the independent one for predictors to target the constructs. It is following the same pattern of outlining the value and discussing the implementations.

Table 5
Average Variance

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	P values
DT	0.463	0.466	0.021	22.020	0.000
FP	0.504	0.501	0.027	18.757	0.000
HC	0.700	0.699	0.021	33.504	0.000
IN	0.486	0.488	0.021	23.701	0.000
SHRP	0.441	0.442	0.026	16.860	0.000

The average variance extracted value from the smart PLS helps analyze the amount of variance for latent constructs and align it with the total variance in finding the results for convergent validity and acceptance. The value has been compared here for the various variables as mentioned earlier and it has been found there that environment is showing a high result for above 0.50 as compared to the other 3 variables.

Table 6*Cronbach Alpha*

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	P values
DT	0.873	0.873	0.015	59.952	0.000
FP	0.754	0.753	0.019	39.659	0.000
HC	0.892	0.892	0.010	89.209	0.000
IN	0.877	0.876	0.011	78.298	0.000
SHRP	0.881	0.880	0.011	77.529	0.000

The Cronbach alpha value is associated with the internal consistency and reliability in the measurement of a group of variables and outlining the acceptance of variables' application for reliability in the research. It has been found that the Cronbach alpha value is above 0.7 for work motivation and mental well-being in the sample values which shows their dominance in the earlier stages.

Table 7*HTMT*

	Original sample (O)	Sample mean (M)	2.5%	97.5%
FP <-> DT	0.809	0.819	0.748	0.896
HC <-> DT	0.691	0.696	0.622	0.769
HC <-> FP	0.856	0.859	0.769	0.937
IN <-> DT	0.879	0.879	0.840	0.915
IN <-> FP	0.961	0.964	0.904	1.026
IN <-> HC	0.878	0.879	0.814	0.929
SHRP <-> DT	0.868	0.870	0.816	0.922
SHRP <-> FP	0.896	0.896	0.833	0.958
SHRP <-> HC	0.677	0.680	0.604	0.757
SHRP <-> IN	0.839	0.844	0.797	0.890
TC <-> DT	0.585	0.586	0.503	0.661
TC <-> FP	0.926	0.925	0.861	0.977
TC <-> HC	0.940	0.940	0.836	1.017
TC <-> IN	0.881	0.879	0.817	0.942
TC <-> SHRP	0.543	0.547	0.451	0.652

HTMT is described as the discriminant validity for the constructs that helps the researcher to understand the construct value as unique and also make sure that the correlation is high or less. The ratio helps reveal the construct discrimination for the lenient cases and also finds the discriminant validity. The construct value in comparison has been found in two incidences in the sample value as high and above 1.

Hypotheses Testing

H1: Selective hiring has a positive impact on firm performance

Selective hiring is a strategic human resource practice that focuses on recruiting the most qualified candidates who align with the organization's goals, culture, and job requirements. Unlike conventional hiring practices, which may prioritize filling vacancies quickly, selective hiring emphasizes rigorous screening processes, including multiple rounds of interviews, skill assessments, and behavioral evaluations. By ensuring that only the most competent and suitable candidates are hired, organizations can build a workforce that is highly skilled, motivated, and capable of contributing to long-term success. Employees who are carefully selected based on their expertise, experience, and cultural fit are more likely to adapt to the organization's

vision, collaborate effectively, and drive innovation. The impact of selective hiring on firm performance is significant, as it directly influences productivity, employee engagement, and retention rates (Dewah & Mutula, [2016](#)). Firms that invest in a rigorous hiring process reduce turnover rates, as employees who fit well within the company are less likely to leave. High retention minimizes recruitment and training costs while fostering a stable and experienced workforce.

H2: Strategic training enhances human capital development

Strategic training is a proactive and structured approach to employee development that aligns with an organization's long-term goals and competitive strategies. Unlike traditional training methods that focus on general skill-building, strategic training is designed to enhance employees' knowledge, competencies, and adaptability in ways that directly contribute to the firm's success. It involves continuous learning, tailored skill development programs, and the integration of advanced technologies to ensure that employees remain relevant in an evolving business landscape. Organizations that invest in strategic training create a knowledgeable and skilled workforce that drives efficiency, innovation, and long-term competitiveness. The impact of strategic training on human capital development is profound, as it enhances employees' technical skills, problem-solving abilities, and leadership potential. A well-trained workforce is more capable of handling complex business challenges, adapting to technological advancements, and contributing to process improvements.

H3: Strategic human resource practices positively influence digital transformation

Strategic human resource (HR) practices play a crucial role in driving digital transformation by ensuring that organizations have the right talent, culture, and processes to adopt and leverage digital technologies effectively. Unlike traditional HR functions that focus primarily on administrative tasks, strategic HR practices take a proactive approach to workforce management, aligning human capital development with the company's long-term digital goals. These practices include selective hiring, continuous training, performance-based rewards, and employee engagement strategies that foster a culture of innovation and adaptability. By implementing HR policies that encourage learning, collaboration, and agility, organizations create an environment where digital transformation can thrive. One of the key ways in which strategic HR practices influence digital transformation is through talent acquisition and development. Digital transformation requires a workforce equipped with advanced digital skills, critical thinking abilities, and the flexibility to adapt to technological advancements. Through selective hiring, firms can recruit employees who possess digital competencies or have the potential to upskill rapidly (Unsworth et al., [2021](#)).

H4: Digital transformation positively affects firm performance

Digital transformation is the process of integrating digital technologies into various business operations, fundamentally changing how firms operate and deliver value to customers. This transformation involves adopting advanced tools such as artificial intelligence (AI), cloud computing, big data analytics, and automation to improve efficiency, decision-making, and innovation. As businesses shift toward digital-first strategies, they gain competitive advantages that enhance overall firm performance. Organizations that successfully implement digital transformation experience improved productivity, cost efficiency, customer engagement, and market responsiveness. One of the primary ways digital transformation positively affects firm performance is by optimizing operational efficiency. Automation and artificial intelligence streamline repetitive tasks, reducing human error and increasing accuracy in business processes. Cloud-based solutions enable seamless collaboration across departments, leading to faster decision-making and improved workflow management (Savage et al., [2011](#)).

H5: IT investment enhances technological capabilities

Information technology (IT) investment plays a crucial role in enhancing a firm's technological capabilities by providing the necessary infrastructure, tools, and systems to support innovation, efficiency, and

competitiveness. The IT investment includes expenditures on hardware, software, cloud computing, cybersecurity, data analytics, and other digital solutions that improve business operations. Organizations that strategically allocate resources toward IT infrastructure gain a stronger technological foundation, enabling them to streamline processes, enhance decision-making, and improve overall performance. As technology continues to evolve rapidly, firms that prioritize IT investment are better equipped to adapt to digital disruptions and maintain a competitive edge. One of the primary ways IT investment enhances technological capabilities is by enabling automation and process optimization. Advanced IT systems, such as enterprise resource planning (ERP) software and artificial intelligence-driven automation, allow firms to reduce manual work, improve accuracy, and enhance productivity (Kaur, [2014](#)). By integrating digital tools into core business functions, companies can optimize supply chain management, customer relationship management (CRM), and financial operations, leading to increased efficiency and cost savings.

H6: Firm size moderates the relationship between digital transformation and firm performance

Firm size plays a crucial moderating role in the relationship between digital transformation and firm performance, as larger and smaller firms differ in their ability to implement and leverage digital technologies. While digital transformation can enhance operational efficiency, innovation, and customer engagement, the extent of its impact often depends on the size of the firm. Larger firms typically have greater financial resources, infrastructure, and expertise to adopt and integrate advanced digital technologies, whereas smaller firms may face constraints such as limited budgets, technological expertise, and resistance to change. These variations influence how effectively digital transformation translates into improved firm performance. For large firms, digital transformation can lead to significant performance improvements by streamlining complex processes, enhancing global connectivity, and enabling data-driven decision-making. With substantial IT budgets and dedicated digital teams, larger firms can invest in automation, artificial intelligence (AI), big data analytics, and cloud computing at scale. These technologies help improve operational efficiency, optimize supply chain management, and enhance customer experiences (Abu Said et al., [2015](#)).

H7: Human capital mediates the relationship between strategic HR practices and firm performance

Human capital plays a critical mediating role in the relationship between strategic human resource (HR) practices and firm performance, as it represents the knowledge, skills, experience, and abilities that employees bring to an organization. Strategic HR practices, such as selective hiring, strategic training, performance-based compensation, and employee engagement initiatives, are designed to enhance human capital by developing a highly skilled and motivated workforce. The effectiveness of these HR practices in improving firm performance is largely dependent on their ability to strengthen human capital, which, in turn, drives productivity, innovation, and competitive advantage. When organizations implement strategic HR practices, they create an environment that fosters continuous learning, skill development, and high employee engagement. Selective hiring ensures that only the most qualified candidates are recruited, while strategic training programs enhance employees' technical and soft skills, preparing them to contribute effectively to the company's success (Guillot-Soulez & Soulez, [2014](#)). Performance-based compensation and career development initiatives further incentivize employees to improve their productivity and remain committed to organizational goals. As a result, firms build a highly capable and motivated workforce, which is essential for achieving long-term success.

H8: Technological capabilities positively influence innovation

Technological capabilities play a crucial role in driving innovation within organizations by providing the necessary tools, infrastructure, and expertise to develop new products, services, and processes. Technological capabilities refer to a firm's ability to acquire, implement, and effectively utilize advanced technologies such as artificial intelligence (AI), big data analytics, cloud computing, and automation. Companies with strong

technological capabilities are better positioned to foster creativity, streamline research and development (R&D) efforts, and accelerate the commercialization of innovative ideas. As a result, firms that invest in and enhance their technological capabilities tend to experience greater innovation, leading to improved competitive advantage and long-term success. One of the primary ways technological capabilities influence innovation is by enabling more efficient and effective problem-solving (Harrison, [2011](#)). Advanced technologies allow firms to analyze vast amounts of data, identify emerging market trends, and generate insights that guide the innovation process. For example, big data analytics helps organizations understand customer preferences and predict future demands, leading to the development of highly tailored products and services.

H9: Innovation enhances firm performance.

Innovation is a key driver of firm performance, enabling organizations to enhance competitiveness, increase efficiency, and adapt to changing market conditions. Innovation refers to the development and implementation of new ideas, products, services, or processes that improve business operations and create value for customers. Firms that prioritize innovation gain a competitive advantage by differentiating themselves from competitors, responding effectively to customer needs, and continuously improving their business models. As industries evolve and technological advancements reshape market landscapes, innovation becomes an essential factor in driving long-term success and sustainability. One of the primary ways innovation enhances firm performance is by fostering revenue growth and market expansion. Companies that introduce new and improved products or services can attract more customers, strengthen brand loyalty, and access new market segments. For example, technology firms that continuously innovate by launching cutting-edge software or hardware products maintain strong customer demand and industry leadership (Davenport, [2015](#)).

H10: Employee participation positively impacts human capital.

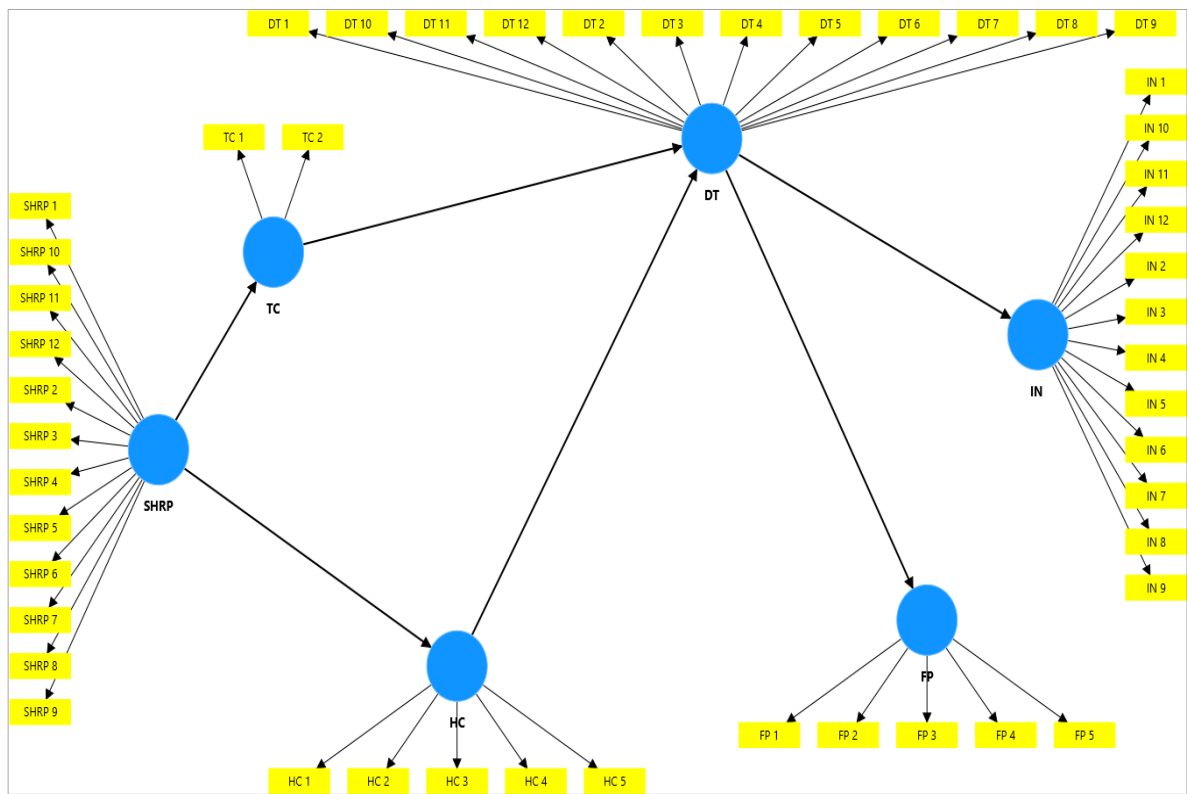
Employee participation plays a critical role in enhancing human capital by fostering a culture of engagement, skill development, and knowledge sharing within an organization. Human capital, which refers to the collective skills, knowledge, and abilities of employees, is a key driver of organizational success. When employees are actively involved in decision-making, problem-solving, and strategic discussions, they become more invested in their roles, leading to greater motivation, improved skill acquisition, and overall workforce development. Organizations that prioritize employee participation create an environment where learning and innovation thrive, ultimately strengthening their human capital. One of the primary ways employee participation enhances human capital is through increased learning opportunities and knowledge exchange (van Gestel & Nyberg, [2009](#)). When employees are encouraged to contribute ideas, collaborate on projects, and engage in decision-making, they develop critical thinking, problem-solving, and leadership skills. This continuous learning process not only enhances individual competencies but also contributes to the overall intellectual capital of the organization. Companies that implement participatory practices, such as team-based decision-making, cross-functional collaboration, and open communication channels, empower employees to develop new skills and broaden their expertise.

H11: Contingent compensation strengthens the relationship between human capital and firm performance

Contingent compensation, which refers to performance-based rewards such as bonuses, profit-sharing, stock options, and incentive pay, plays a crucial role in strengthening the relationship between human capital and firm performance. Human capital, comprising employees' knowledge, skills, and expertise, is a key driver of organizational success. However, the extent to which human capital translates into firm performance depends on how well employees are motivated and incentivized to apply their capabilities effectively. Contingent compensation acts as a reinforcing mechanism, ensuring that employees are rewarded for their contributions, thereby enhancing motivation, productivity, and organizational commitment (de Janasz & Crossman, [2018](#)). One of the primary ways contingent compensation strengthens this relationship is by

aligning employee efforts with organizational goals. When employees see a direct link between their performance and financial rewards, they are more likely to leverage their skills and expertise to drive productivity and efficiency. This incentive-based system encourages employees to go beyond their routine tasks, engage in innovative problem-solving, and contribute to business growth.

Figure 2
Diagrammatic view of hypothesis (Author)



Conclusion

Finding the right and sufficient information to support management requires systematic research and must be accompanied by comprehensibility; what to do with fancy diagrams or data if they cannot be interpreted or prove to be too complicated for the participants. In Pakistan, various laws support the realization of equality. For example, according to the Constitution of Pakistan, every person is equal before the law. Based on the results obtained, it can be concluded that all participants in the study understand the basic principles of equality (Sarkar & Garg, 2020). In today's recruitment, the emphasis is on the right attitude and the ability to adapt. The results strongly emphasize that the applicants' competence, experience, strengths, and suitability for the applied position, as well as motivation, are a key part of recruitment. The initial stage of recruitment is said to be the most critical stage of the recruitment process, as most discrimination in recruitment occurs at that time. Based on the results, respondents felt that equality in the initial stage of recruitment is supported by the fact that the application form is the same for all applicants. Each application must be processed carefully and in detail in order for equality to be achieved.

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