FACTORS INFLUENCING CHANGE MANAGEMENT DURING DIGITAL TRANSFORMATIONS: AN EMPIRICAL INVESTIGATION

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ABSTRACT

Organizations that want to remain competitive in the ever changing digital world of today must undergo digital transformations. Managing change during these transformations presents complex challenges. In order to better understand how change management affects digital transformations, this study will look into those elements. Using the convenience sampling method, two hundred fifty working respondents from various Haryana districts were chosen as a sample. The parameters derived from earlier investigations were identified using structured questionnaire. To analyze the data, factor analysis is employed. The analysis revealed three dominant factors, derived from 25 statements, shedding light on the identified challenges. Furthermore, this study explores strategies that can assist organizations in navigating these challenges. By addressing the identified challenges, organizations can enhance their change management practices during digital transformations.

KEYWORDS: Digital Transformations, Change Management, Factors, Challenges, Strategies

INTRODUCTION

The present day is undergoing significantly, moving from industrialization to the age of intelligence. Integrated commodities have had a significant social and organizational impact. With regard to the impact of both internal and external factors like culture, leadership, and organizational changes which are influenced by financial, political, social, ecological, and even corporate trends, management decisions dependent on whether the change is to be implemented. How is prioritized and considered into account (Jalagat, 2016). Globally, the quick advancement of digital technology has led to important adjustments in many different industries' planning and operations. The concept of "digital transformation" refers to an effort to mitigate the threat of digital disruption in the modern era (Rego et al. 2021). It's common to use the phrases "digital transformation," "digitalization," as well as "digital innovation" interchangeably. Nevertheless, it is significant to know disparity among three in order to have a conversation built on more informed and common terminology (Karen et. al. 2018). Technologies have emerged as a key paradigm for digital transformation which should be taken into account to support long-term survival and success businesses. Due to the numerous technologies enabling digital transformation, such as cloud computing, big data, analytics for prediction, and interactive interface technology, today's organizations confront both opportunities and problems (Rego et al. 2021). The industrial sector has a close interaction with digital technology, represented by the Internet and big data, as a consequence of digital economy's explosive rise. Digital platforms are being used as a tool for the expanding every industry, driving significant changes in the way business produce and run their organizations.

Digitalization is an increasing use of IT and communication technology in all life stages, according to Jedynak et al. (2021). As a result, there has been a significant increase in scholarly attention to how these technologies affect businesses. In recent years, a single focus on technology has been countered by the understanding that organizations are subject to processes of change, starting with information processes and moving through corporate processes to company models. This board change confirms several socio-technical problems and concerns, which pose barriers to the achievement to the change effort. According to researchers, experts and practitioners change is a difficult task which involves a complex process involving people, process, and other factors.

LITERATURE REVIEW

The literature is based on digital transformation from a various perspectives. In general, Parusheva (2019) stated that the entire value chain is affected by digitalization at every stage and activity. In the construction industry, as well as in many other areas, it provide a number of advantages and benefits, such as increased productivity, more rapid construction and time during project implementation, significantly higher quality savings construction documentation, etc. The construction industry has lagged behind other industries in adopting new technology, and there are additional obstacles as well, including a different level of adoption of new IT in smaller construction firms that frequently serve as subcontractors and the presence of some specific technical difficulties. Three different types of digital transformation processes have been adopted by Verhoef et al. 2021, e.g. digitalization, digitization, and digitally transformable process. These studies have been carried out with a view to developing and defining growth strategies for digital businesses, as well as the resources and skill that are needed in order to achieve successful digital transformation. Those researches were developed and define growth strategies for digital businesses as well as the resources and skills necessary to successfully undertake a digital transformation. The outcome of that the organizational structures required for digital transformation have implications for the outcomes of measures that are calibrated and conclude by offering a research agenda that will encourage and direct future investigations into digital transformation.

The three directives of leadership, interaction, and inclusion make up the Change Management Framework, according to Pacolli (2022), while on the other hand create solid foundations for an organization's sustainable and resilient digital transformation. These articles summarizes the importance of the subject area under discussion and give advice to people on how to successfully implement and sustain their digital transformation programmer. Krausa (2022) stated that the paper has two goals. Considering that previous study in these fields has only covered a small portion of the subject matter, it is first necessary to map the thematic evolution of this investigation. The second goal of this study is to suggest a synergistic structure that links current research on digital transformation to the fields of management and business. This framework will help shape the evolutionary viewpoint used in this article. The framework is seen as a solid foundation for further discussion and upcoming research given the developing nature of the topic under investigation.

The topics covered by Hai et al. (2021) include the psychological evolution of the digital transformation process, the adaptive components of the process, the successes attained, the critical importance of the digital transformation prior to its effect of Covid-19 pandemic, and challenges and limitations confronting group of public employees and executives during the process. The findings of this research will be used to construct the theoretical structure and main points of certain leadership advice. When Karan et al. (2018) analyses the existing

empirical knowledge on digital transformation, the researcher offers knowledge about why organizations go through this process, how to carry it out, and how it impacts an organization. The technological, organizational, and societal dimensions of digital change made possible by AI are all examined in this essay. It does this by Wang and Su (2021) analysis utilizing three specific instances of Chinese major manufacturing businesses. We suggest an AI company model and discuss environmental factors that drive in order to explain how AI technology is being used in the manufacturing sector. The industrial sector in China has undergone a significant digital change, which is thoroughly summarized and explored in this paper. It theoretically supports relevant research in the area of adopting AI technology, but more importantly, it offers real-world expertise in advancing a digital transformation and modernizing the manufacturing sector.

According to the research findings and empirical data, the study by Hye et.al (2020) summarizes the investigation into how FC is recognized in TA initiatives. This investigation was done, through the use of technology; improve the administration and a service of the public organization. In addition, it included information on the elements that affect a public company's ability to provide quality service.

OBJECTIVE OF THE STUDY

The key objective is to analyse the factors influencing change management during digital transformations.

RESEARCH METHODOLOGY

The research study was carried out from July to December 2022 and is exploratory in nature. The sample of 250 respondents was selected from different districts of Haryana region using convenience sampling method. After removing the incomplete responses, a total of 200 questionnaires were distributed, and this questionnaire was split into two halves - Demographic variables and 25 factors based on a five-point Likert scale (5= very much, 4= much, 3= somewhat, 2= barely, and 1= not at all). Additionally, discussion papers, books, and research articles from secondary sources were also used. Using SPSS, descriptive statistical techniques & factor analysis are used to analyse the data.

DATA ANALYSIS AND INTERPRETATION

DEMOGRAPHIC INFORMATION OF THE RESPONDENTS

Table 1 lists the respondents' demographic data i.e. age groups, gender groups, marital status, Industry/field of work, educational level and monthly income. It is shown that 43 percent of respondents are between the ages of 30 and 45, 28 percent are between the ages of 45 and 60, 19 percent are under the age of 30, and only 10 percent are over the age of 60. With regard to gender result, 71 percent respondents pertain to male group and 29 percent respondents belong to female group. According to marital status result, 79.5 percent respondents pertain to married category and 20.5 percent respondents belong to unmarried category. Industry/field of work analysis depicts that 52 percent of the respondents belong to non-manufacturing industries and 48 percent of the respondents belong to non-manufacturing industries.

Sr. No.	Demographic Information	Occurrence	Percentage			
Age Groups (in Years)						
1.	Below 30	38	19.0			
2.	30-45	86	43.0			
3.	45-60	56	28.0			

Table 1: Demographic Information

4.	Above 60	20	10.0
	Total	200	100.0
Gender	Groups		
1.	Female	58	29.0
2.	Male	142	71.0
	Total	200	100.0
Marita	Status		
1.	Married	159	79.5
2.	Unmarried	41	20.5
	Total	200	100.0
Industr	y/Field of Work		
1.	Manufacturing	104	52.0
2.	Non-Manufacturing	96	48.0
	Total	200	100.0
Educat	ional Level		
1.	High school diploma or equivalent	16	8.0
2.	Bachelor's degree	65	32.5
3.	Master's degree	57	28.5
4.	Any Other	62	31.0
	Total	200	100.0
Monthl	y Income (in INR)		
1.	Up to 50,000	47	23.5
2.	50,001-75,000	60	30.0
3.	75,001-1,00,000	70	35.0
4.	Above 1,00,000	23	11.5
	Total	200	100.0

Source: Survey Method

As per outcome of educational level, 32.5 percent of respondents have bachelor's degree, 28.5 percent of respondents have master's degree, 31 percent people have done other studies and 8 percent of respondents have done high school diploma.

According to results broken down by monthly income, 35 percent of the participants have incomes between Rs. 75,001 and Rs. 1,00,000, 30 percent have incomes between Rs. 50,001 and Rs. 75,000, 23 percent have incomes up to Rs. 50,000, and 11.5 percent have incomes over Rs. 1,00,000 per month.

RELIABILITY ANALYSIS

According to table 2, the aggregate Cronbach's Alpha score for the 25 assertions is.957, indicating that given statements have a comparatively high level of internal consistency. As a result, instrument is highly trustworthy and may be utilized to further the investigation because reliability is 90 percent.

Table 2: Reliability Analysis

Cronbach's Alpha	No. of Statements
.957	25

KMO AND BARTLETT'S TEST

As shown in table 3, the KMO measure of sample adequacy is 0.954, demonstrating the usefulness of factor analysis for the data set utilised in this investigation. Similar to this, the significance level for Bartlett's test of sphericity with a value of about 3128.405 Chi-square is 0.000, indicating that there are significant correlations between the variables. This indicates that this data set is suitable for the main component analysis.

So, KMO and Bartlett's test results confirm that factor analysis is highly beneficial for the available data. In conclusion, sample size is sufficient to distil the variable into its most important components.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.954	
Bartlett's Test of Sphericity	3128.405	
	Degree of freedom	300
Sig.		.000

COMMUNALITIES OF STATEMENTS

The variance of all variables that has been defined by the total variance of the elements contributing to the difficulties in coping with change through digital transformations is presented in table 4 under Communalities. For factor analysis, a community value of above 0.50 is sufficient. However, communalities are above 0.50 for each of the 25 statements, indicating that the retrieved components accurately describe the variables.

Table 4: Communalities of Statements

Communalities		
Statements	Initial	Extraction
Lack of digital skills and expertise among employees, requiring significant training and up	1.000	.598
skilling efforts.		
Budget constraints	1.000	.536
Change fatigue and burnout among employees due to repeated organizational changes.	1.000	.618
Uncertainty about the return on investment (ROI) and financial benefits of digital	1.000	.540
transformation efforts.		
Employee mindset and attitude towards technology and digitalization.	1.000	.612
Resistance to change from employees due to fear of job loss or changes in job roles.	1.000	.536
Leadership challenges in effectively communicating the vision and goals of digital	1.000	.712
transformation initiatives.		
Organizational culture that is resistant to embracing technological advancements.	1.000	.575
Competing priorities and resource allocation challenges within the organization.	1.000	.529
Disruption to existing revenue streams during the transition period.	1.000	.599
Cost of acquiring and implementing new technologies or upgrading existing systems.	1.000	.721
Limited financial resources for investing in digital transformation initiatives.	1.000	.628
Cost of training and up skilling employees to adapt to new technologies and processes.	1.000	.628
Lack of knowledge and comprehension among stakeholders and employees about the advantages of digital transformation.	1.000	.608
Liability and legal risks associated with data breaches, cyber attacks, and privacy	1.000	.711
violations.	1.000	.623
Regulatory and compliance factors		
Resistance or pushback from influential stakeholders who are hesitant to adopt new technologies.	1.000	.607
Inadequate change management support and resources for employees to navigate through the transformation process.	1.000	.607
Potential impact on employee morale and motivation during the transformation process.	1.000	.536
Integration challenges between existing systems and new technologies.	1.000	.592
Complexity and technical difficulties in implementing and maintaining digital solutions.	1.000	.617
Cyber security risks and concerns related to data privacy and protection.	1.000	.622
Rapidly evolving technology landscape, making it challenging to keep up with the latest advancements.	1.000	.561
Availability and reliability of technology infrastructure and connectivity	1.000	.556
Legal challenges related to e-commerce, including online transactions, consumer rights,		.553
and dispute resolution.	1.000	
Principal Component Analysis for Extraction		

EXPLANATION OF TOTAL VARIANCE

The sum of the variance explained through each component is shown in table 5. It can be seen that each of the primary components accounts for a different portion of the overall variance of observed variables.

	Initial Eigen values			Extraction Sums of Squared Loadings		
Components	Total	Percent of Variance	Cumulative Percent	Total	Percent Variance	ofCumulative Percent
	12.302	49.208	49.208	12.302	49.208	49.208
2	12.302	6.738	<u>49.208</u> 55.947	12.302	6.738	55.947
2						
3	1.040	4.159	60.106	1.040	4.159	60.106
4	.911	3.643	63.749			
5	.817	3.270	67.019			
6	.767	3.069	70.087			
7	.712	2.847	72.934			
8	.637	2.549	75.484			
9	.606	2.422	77.906			
10	.562	2.246	80.152			
11	.489	1.955	82.107			
12	.468	1.872	83.979			
13	.434	1.736	85.716			
14	.405	1.620	87.335			
15	.367	1.466	88.802			
16	.360	1.440	90.242			
17	.353	1.413	91.655			
18	.327	1.309	92.963			
19	.304	1.215	94.179			
20	.279	1.115	95.293			
21	.268	1.071	96.364			
22	.248	.992	97.357			
23	.235	.942	98.298			
24	.220	.882	99.180			
25	.205	.820	100.000			
Principal Com	ponent A	Analysis for Extraction	4		•	•

Table 5: Explanation of Total Variance

The initial principal factor accounts for 49.208 percent of the total deviation, the second principal factor explains 6.738 percent, and the third principal component accounts for 4.159 percent of the total variance. According to the table overview, only these three components were recovered from the Principal Component analysis, and they are significant enough to be kept for rotation and additional analysis. The amount of variance reflected by an element witch more than one Eigen value that is greater. Consequently, only those elements that have an Eigen value greater than one are considered as primary elements. A large amount of the variance, or 60.106 percent, is due to all three factors with Eigen values greater than one, and the remaining variation can be determined by other variables. The primary issue for those selected one is the element, which account for 49.208 percent of variance among three categories.

ROTATED COMPONENT MATRIX

Table 6 displays the findings from the relatedness element matrix, indicating the top three factors for each variable's factor loadings. To determine which variables load on each factor, a rotation component matrix displays the factor loadings that have been adjusted (correlation). The rescaled factor loadings indicate "Economic and Legal Challenges" as first factor (with factor loadings 0.593, 0.557, 0.632, 0.717, 0.782, 0.671, 0.658, 0.772, 0.724 and (0.473), "Social and Technological Challenges" as second factor (with factor loadings (0.570), (0.656), (0.677), (0.686), (0.491), (0.646), (0.703), (0.720), (0.657) and (0.670) and "Personal Challenges" as third factor (with factor loadings (0.534), (0.643), (0.680), (0.721) and (0.536).

Table 6: Rotated Component Matrix^a

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Three Components Extracted	^a : Three Components Extracted			

FACTOR ASSESSMENT SUMMARY OF STATEMENTS

The importance of the factors was clearly, Table 7 shows a summary of the evaluation of the factors. In addition to the factor loadings of each of the variables, each factor also exhibits a unique alpha reliability value.

Table 7: Factor Assessment Summa	ry of the Statements
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Sr.	No.	Statements	Factor Loadings
Eco	nomic and Legal Factors		
1	Budget constraints	.593	
2	Uncertainty about the return of transformation efforts	.557	
3	Competing priorities and reso	urce allocation challenges within the organization	.632
4	Disruption to existing revenue	e streams during the transition period	.717

5	Cost of acquiring and implementing new technologies or upgrading existing	.782
5	systems	./82
6	Limited financial resources for investing in digital transformation initiatives	.671
7	Cost of training and up skilling employees to adapt to new technologies and	.658
	processes	
8	Liability and legal risks associated with data breaches, cyber attacks, and privacy	.772
Ŭ	violations	=
9	Regulatory and compliance factors	.724
10	Legal challenges related to e-commerce, including online transactions, consumer	.473
	rights, and dispute resolution	
Soci	al and Technological Factors	
1	Resistance to change from employees due to fear of job loss or changes in job	.570
	roles	
2	Organizational culture that is resistant to embracing technological advancements	.656
3	Lack of knowledge and comprehension among stakeholders and employees about	.677
	the advantages of digital transformation.	
4	Resistance or pushback from influential stakeholders who are hesitant to adopt	.686
	new technologies	
5	Potential impact on employee morale and motivation during the transformation	.491
	process	
6	Integration challenges between existing systems and new technologies	.646
7	Complexity and technical difficulties in implementing and maintaining digital	.703
	solutions	
8	Cyber security risks and concerns related to data privacy and protection	.720
9	Rapidly evolving technology landscape, making it challenging to keep up with the	.657
	latest advancements	
10	Availability and reliability of technology infrastructure and connectivity	.670
Pers	sonal Factors	
1	Lack of digital skills and expertise among employees, requiring significant	.534
	training and up skilling efforts	
2	Change fatigue and burnout among employees due to repeated organizational	.643
	changes	
3	Employee mindset and attitude towards technology and digitalization	.680
4	Leadership challenges in effectively communicating the vision and goals of digital	.721
	transformation initiatives	
5	Inadequate change management support and resources for employees to navigate	.536
	through the transformation process	

Factors Contributing toward Challenges Faced During the Digital Transformation Process

After using factor analysis, which condensed the 25 claims into three, these three factors along with loadings for each claim, Cronbach alpha, Eigen value and the proportion of variance explained by each component—were then retrieved. These factors are as:

Factor 1: Economic and Legal Factors

Table 6 depicts that "Economic and Legal Challenges" is the first and the most significant factor comprising of ten statements. It explained 49.208 percent of the total variance of the data with an Eigen value of 12.302. The factor included ten statements namely "Budget constraints (0.593)", "Uncertainty about the return on investment (ROI) and financial benefits of digital transformation efforts (0.557)", "Competing priorities and resource allocation challenges within the organization (0.632)", "Disruption to existing revenue streams during the transition period (0.717)", "Cost of acquiring and implementing new technologies or upgrading existing systems (0.671)", "Cost of training and up skilling employees to adapt to new technologies and processes (0.658)", "Liability and legal risks associated with data

breaches, cyber attacks, and privacy violations (0.772)", "Regulatory and compliance factors (0.724)" and "Legal challenges related to e-commerce, including online transactions, consumer rights, and dispute resolution (0.473)". The statements contained in the factor are related to economic and legal dimensions.

Factor 2: Social and Technological Factors

The second factor, "Social and Technological Challenges", accounted for 6.738 percent of the total variance with an Eigen value of 1.685. It consists of ten statements such as, "Resistance to change from employees due to fear of job loss or changes in job roles (0.570)", "Organizational culture that is resistant to embracing technological advancements (0.656)", "Lack of awareness and understanding of the benefits of digital transformation among employees and stakeholders (0.677)", "Resistance or pushback from influential stakeholders who are hesitant to adopt new technologies (0.686)", "Potential impact on employee morale and motivation during the transformation process (0.491)", "Integration challenges between existing systems and new technologies (0.646)", "Complexity and technical difficulties in implementing and maintaining digital solutions (0.703)", "Cyber security risks and concerns related to data privacy and protection (0.720)", "Rapidly evolving technology landscape, making it challenging to keep up with the latest advancements (0.657)" and "Availability and reliability of technology infrastructure and connectivity (0.670)". The statements contained in the factor are related to social and technological dimensions.

Factor 3: Personal Factors

The third factor "Personal Challenges" is a combination of five statements. These statements included in this factor are "Lack of digital skills and expertise among employees, requiring significant training and up skilling efforts (0.534)", "Change fatigue and burnout among employees due to repeated organizational changes (0.643)", "Employee mindset and attitude towards technology and digitalization (0.680)", "Leadership challenges in effectively communicating the vision and goals of digital transformation initiatives (0.721)" and "Inadequate change management support and resources for employees to navigate through the transformation process (0.536)". With an Eigen value of 1.040, this factor explains 4.159 percent of the overall variation. The elements of personal dimensions are covered in these sentences.

Factors Emanating from Factor Analysis

According to factor analysis, there are three key elements that make it difficult to manage change during the digital transformation process. The names of these factors were taken into account while compiling the list of assertions under each element and their corresponding loadings. The table displays the Eigen value and the percentage of variance that is explained by factors. Table 8 shows that the three principle factors, comprising a total of 25 elements, together accounted for 60.106 percent of the variance. Given that its Eigen value and percent of variance explained are 12.302 and 49.208, accordingly, economic and legal problems are the predominant component that poses difficulties in handling change within the digital transformation process. The next significant component is social and technological challenges, which have an Eigen value of 1.685 and a percentage of variance explained of 6.738.

Moreover, personal challenges are the third factor in terms of their Eigen value of 1.040 and percent of variance explained with the value of 4.159.

Sr. No.	Factors	No. of	Eigen	Percentage of	Cumulative
		Variables	Value	variations explained	Percentage
1	Economic and Legal	10	12.302	49.208	49.208
	Factors				
2	Social and Technological	10	1.685	6.738	55.947
	Factors				
3	Personal Factors	5	1.040	4.159	60.106

CONCLUSION

Conclusively, it can be articulated that there are several challenges faced in managing change during digital transformations. The result indicated that significant factors were identified using the technique of factor analysis, in addition to loadings for all statements, Cronbach's alpha, Eigen Value, and the proportion of variation attributed to every factor. Economic and legal factors, social and technological factors, and personal factors are the dominant factors. It can be said that these all factors consider as challenges faced in managing change during the digital transformation process.

RECOMMENDATIONS

The present study recommends that to overcome these challenges, organizations can employ several strategies. These include creating a compelling vision for the digital transformation, fostering a culture of innovation and experimentation, providing continuous training and up skilling opportunities, and leveraging change champions within the organization to drive adoption and manage resistance.

Managing change during digital transformations is a complex undertaking. Organizations must recognize and address the challenges that arise, ranging from employee resistance to process realignment and stakeholder engagement. By implementing effective strategies and embracing a proactive approach, organizations can successfully navigate the digital transformation journey and achieve long-term success in the digital era.

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