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Digital Persuasion and Learning - Decoding the Impact on Behavioural Change using Technology

A Case of TeamGlobal Logistics Pvt Ltd., Mumbai

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ABSTRACT

In the new normal, corporates today are facing with the changing skill set requirements but the access to information has enabled companies to create a web of persuasive technology around us. Today digital learning environments are not only affecting our attitudes and beliefs but also have a good influence on our behaviours. Today, the choice of assorted classical and digital teaching methods is indispensable for companies and despite high initial investment cost, e-learning can ultimately lead to cost reduction and enhancement of work efficiencies.

Advances in psychology, cognitive science, neuroscience and digital technologies are to be explored and exploited for creating a digitally persuasive environment in a number of context (i.e., e-commerce, social marketing, education and health etc.). The paper reviews the earlier researches in all relevant areas and draws insights from earlier researches.

It will ponder on intriguing questions like, how behaviour can be changed using digital persuasion? How the mid-size companies can use these technologies for the learning and developmental needs of the team? Several other concepts, theories and principles of behaviour change and digital persuasion are discussed and reviewed. The main research question is that behaviour changes and learning can be given a positive direction with the use of persuasive technology. The research methodology used is empirical research complimented by secondary research. The objective of the paper is to provide with ethical considerations in designing persuasive environments and also sharing the frameworks and applications of the same.

Keywords: *Engagement, Learning, Behavioural Change, Persuasive Technology, Social Learning*

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1.0   INTRODUCTION

In the new normal all the organizations today are striving to be the Learning organizations as they have realized that "It is the survival of the fittest" and within the constraints of the available resources of people, practices and processes they have to set new benchmarks of efficiency and productivity. The Learning platforms have to reinforce and enact emerging changes and accordingly influence the positive behaviours of the people within the organizations. This paper attempts to understand how behaviour can be changed using the persuasive learning technology within the corporates. It will share insights on the psychological surveillance through gamification techniques, its links to new psychological concepts of 'character development,' 'growth mindsets' and 'personal qualities,' and its connections productivity enhancements and accomplishment of the vision of the company.

Methodologically, our research mobilizes the nodes and the network analysis to trace the organizational, social and macro-economic factors that are translated and encoded to make the 'persuasive technology' of 'psycho-compulsion' be a success and also to reinforce and reward positive behaviours that are aligned with corporate strategies. In organizational set-up what is more important is also team work and collaboration – whether it is within or outside the company. The aim of most of the learning and development programs are broadly classified into Functional, Behavioural and Technical, also called as 'FBT' In the current digital economy and Industry 4.0 what is more important is to foster social and emotional learning through Technology. This research was taken with an objective to understand how persuasive digital technology can be used to build the characters, traits and skills of the employees with reference to the business requirements. In the current Web 2.0 era, it is a well-established fact that the digital technology has enabled and facilitated positive change in the behaviour and also helped in Psychological wellbeing and mental health of the individuals. The term 'Persuasive Technology' connotes the change in behaviours through digital technology and has been in use since 1998. As stated by Fogg [1], "Persuasion is more than just computer-mediated

communication and it focusses on human computer interaction." Oinas-Kukkonen [2] defined the term behaviour change support systems (BCSS): "A sociotechnical information system with psychological and behavioural outcomes designed to form, alter, or reinforce attitudes, behaviours or an act of complying without using coercion or deception". Persuasion has always been a basic and fundamental part of learning as a traditional approach and with the use of persuasive technology these principles are stimulating learners through the digital domain. In current post pandemic context, the concept of persuasive technology-based learning has gained more importance whether it is orienting teams on organizational vision, strategy or inducting and training the team on consumer behaviours, business retentions and sales.

1.1   TEAMGLOBAL LOGISTICS

Teamglobal is an integrated Logistics services provider headquartered in India. It offers services in multiple segments of logistics Viz. Sea Freight, Airfreight, Project Cargo Transportation, Cargo Terminals and Coastal Shipping. As a group it has multiples offices and is diversified into freight forwarding, warehousing, Container Freight Stations, Transportation.

Established in 2005, Teamglobal is an ISO 9001:2015 (QMS) & ISO 27001:2013 (ISMS) certified company with strong business ethics. Teamglobal specializes in carriage of (LCL) Less than Container load shipments and is the largest operator in India in this category. It has been accredited with the Best Consolidator of the Year – All India 9 times in a row from 2010 to 2019. Teamglobal is a member of leading global networks like World Wide Alliance, Air Cargo Group and GPLN for the different segments of business it operates. Teamglobal offers transport services between all major international cargo centres using combination by land, sea and air thus making us one stop logistics shop for all our customers Logistics requirements globally. The company thrives towards service excellence using the expertise of IT coupled with the vision of Human Resource Department. A highly motivated team of HR professionals are continuously working towards making the vision of HR come through by

making use of these persuasive technology and this is not only for the internal team but also for the customers.

At TeamGlobal the most crucial HR initiative was to work towards developing and implementing the persuasive technology to modify the behaviours for positive outcomes and to reinforce the positive behaviours.

1.2   *Need for the study:*

This study explores three questions:
* Does persuasive technology affect or bring changes in behaviours?
* Does behaviour change use digital persuasion?
* Is it that behaviour changes and learning can be given a positive direction with the use of persuasive technology?

1.3   *Objectives of the study:*

* To learn how to analyse and evaluate digital learning that is likely to persuade individuals and change behaviours
* To understand basic psychological concepts used in persuasion and learning.
* To share the frameworks and applications of the same.

1.4   *Scope of the study:*

HR at TGL plays a vital role in the attainment of its goal by ensuring the company attracts and retains competent employees who in turn create an important source of competitive advantage for a firm. The study on employees at Teamglobal, a private sector logistics company. The respondents involved in this study were 113 employees' cross verticals and cross borders (Global) Time, resources, availability of respondents, geographical representation of industry were important constraints that affected the conduction of the study.

2.0 LITERATURE REVIEW & FUNDAMENTALS OF DIGITAL PERSUASION AND LEARNING

Fogg 2003 [3], in his seminal work propounded that computers and digital modes can be the best social actors and stimulating agents and if the social interaction, persuasion and learning are given the digital perspective they will change the approach to learning and possibly make it more engaging and impactful. He was of the view that technology holds strong potential to change the attitudes and behaviours of users and also stated that the user should not rely on the coercion and deception techniques when training the people. To add to this the fact that learning is more when people are in their natural sense all the supporters of Digital Persuasion Techniques for learning have advocated for high impact learning through gamifications and engagements.

Digital technologies are facilitating Big Data and its predictive analysis as well. By having the various components combined together we can have an interplay for attitude and behaviour change. Infact these are reshaping the relationship between the professional groups, management and the employees and different and varied globally distributed teams as well. Significant changes are also witnessed in the accountability and responsibility of the people as these support decision trees, business simulations, adaptive learning through the virtual reality and augmented learning.

Through this paper we have attempted to understand the digital learning approach which is practised at TeamGlobal Logistics Pvt. Ltd. We have noticed that the new learning platforms and the digital technologies are not merely reconfiguring the professional practised by also redefining the rules and principles of learning.

We tried to uncover meaningful insights based on the strength of links between the behaviour modifications and Digital Persuasion Technologies. With the byte size, and flexi on the go learning we are able to develop new skills, also reskill and upskill the employees in a better and more

customized manner. Though we are of the view that there is no supplement to the face-to-face teaching but in case a strong emotional appeal is used with the technology there can be a positive behaviour change. Technology can be one of the best enablers and if it fruitfully used the human interactions it can help in modifying behaviours and ultimately facilitate learning. The corporates need to ensure that it is a conversational learning which can be used through advancement in digital technology.

In modern day, the concept of design thinking has been developed and practiced immensely. The learning can be more when it comes through a structured process and when it also encourages cognitive learning along with the interpersonal skills it takes up the dynamism which is good enough to change the human behaviour. Engaging the employees and the learners through online quizzes, role plays, activities and moot courts etc can not only boost the social learning but also in a way build on the emotional learning. Through videos and animations, the learners can be taught the favourable and acceptable corporate behaviours. The motivational messages from leaders can reinforce the vision of the company and also help it to percolate down the team. The chatbot technology also facilitates learning through the conversational and discussion techniques. Current day, translating software has provided an upper edge by making an emotional appeal to the team members. When the digital technologies talk to the people in their native language it ensures that the message is not only conveyed clearer but also faster and accurately. These provides for new and novel experiences through real life simulations, video blogs, videos and smaller GIF's as well.

3.0   CONCEPTUAL FRAMEWORK

With ever-growing digital interconnectedness, emergent socio-technical environments are increasingly designed for active participation and contribution rather than for passive consumption Mumford, 2000). Learners have gradually become co-creators of content and value, and even co-designers of these environments in emerging cultures of participation as given by Fischer et al., 2005.

During taking this research we developed a model to make it a base for the research project which is as follows:

Figure 1 – Conceptual Framework
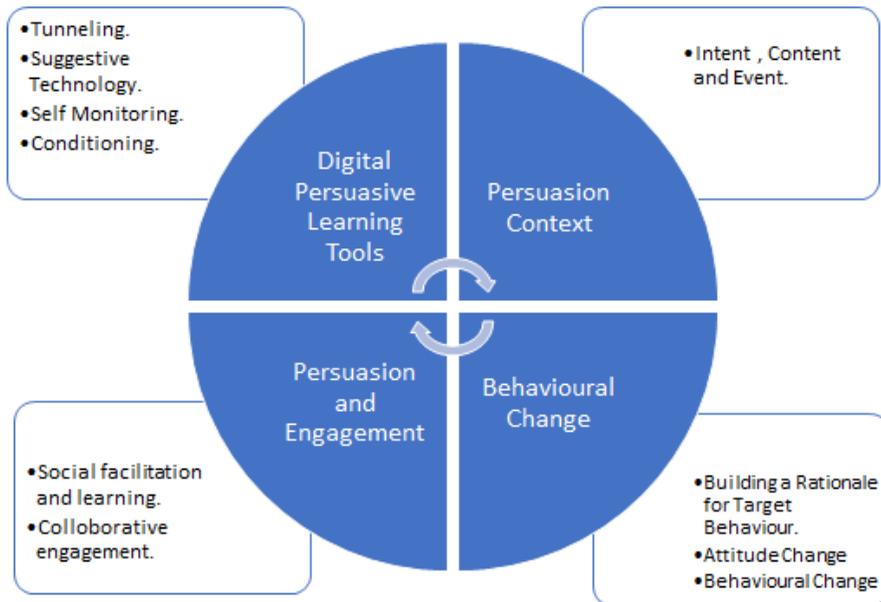
The TCEB Model of Digital Persuasive Technology: A comprehensive approach to Behavioural change (Developed by Authors)

3.1 Construct:

Table 1: Construct

Construct	Description	Associative Relationships
igital Persuasive and Learning Tools	• **Tunnelling**: Places the user inside a process with pre-determined Directions. • **Suggestive Technology:** • Persuasive design strategy for delivering a message at the opportune moment. • **Self-Monitoring**: Allows to monitor Progress.	This Framework helps in development of Learning platform which is more influential and also a comprehensive PT tool.

	• **Conditioning**: Embeds emotional urges and feedbacks into the design.	
Persuasion Context	• **Intent:** **Endogenous**: From within **Exogenous**: From Outside • **Autogenous**: Self Developed • **Content**: Cues, Incidences, Reflection based etc. • **Event:** Business Scenario Modelling, gamifications, Simulations, Augmented reality and Virtual reality	The message ideation, strategy, channel and the route play a significant role in making the Digital Persuasive Learning more impactful.
Persuasion and Engagement	• **Social Facilitation:** Learner learn by observing, imitating others and also through social influence and facilitation. • **Collaborative Engagement**: Cooperation and collaboration influences individual learning and has a long-term multiplier effect.	The cognitive abilities and behaviours of people are developed by social influences and environmental determinants and in the new normal what is more important is to have collaborative learning and engagement which can even be facilitated through online virtual modes.
Behavioural Change	• **Awareness** • **Intent** • **Change in Beliefs and Attitudes** • **Behavioral change**	There is various level of cognitive dissonance when a person moves from the various stages listed before any behavioural change happens and technology can help to re-inforce positivity by motivating towards the target behaviours.

4.0 HYPOTHESIS

H0: Digital Persuasion and learning does not have an impact on behavioural change in the new normal

H1: Digital Persuasion and learning has an impact on behavioural change in the new normal.

The above hypotheses are further divided into three sub hypotheses:

H0: Interactive Persuasive Technology cannot replicate real world scenario and are not engaging.
H1: Interactive Persuasive Technology can replicate real world scenario and are engaging.

H0: Persuasive technology does not have any impact on behavioural change.
H1: Persuasive technology has a positive impact on behavioural change.

H0: The intent, content and event of persuasive technology does not have an impact on behavioural change.
H1: The intent, content and event of persuasive technology has an impact on behavioural change.

5.0   RESEARCH METHODOLOGY

5.1   Data Sources

Primary data was collected from the employees at Teamglobal using a structured questionnaire. To get the required information, we designed and distributed a set of questionnaires via google form link, that represents the independent variables and dependent variables which were extracted from established questionnaire. Consequently, the sample size of the current study is N=113.

5.2   Research Design

Research design is a blue print that has details about the methods to be used in research for the variables. Hence, this master plan has to be designed in a way that it is in line to meet the exact needs of the objectives. The research

design for this study was the cross-sectional study. Furthermore, the study was co-relational in design because there was an intention to establish the relationship between dependent and independent variables of the study. Hypothesis testing and regression analysis was done. The dependent variable is behavioural change and the independent variables are Persuasive technology, Interactive Persuasive Technology and the intent, content and event of persuasive technology. The co-relational research aims to ascertain if there is a positive association between the two variables.

5.3 Sampling Technique:

In this research, Purposive sampling from non- probability sampling method was used to select the representative sample from the organization.

5.4 Research Instruments

This research study used primary data as the principal source of information in which individual employees of Teamglobal were considered as the unit of analysis along with secondary data, reviewed research papers. The study employed questionnaire as a method of data collection which consisted of 12 questions on 5-point Likert scale.

5.4.1 Measurement Tools:

To measure behavioral change, questions were employed on all parameters of the proposed TCEB model on five-point Likert scale ranging from 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree. Simplicity of items and less ambiguity was ensured throughout the questionnaire through Cronbach Alpha Scale. The questions ensured clarity and simplicity which allowed respondents to indicate level of agreement with the statement provided.

## 5.5 Data Collection and Data Analysis Techniques:

The collected data through questionnaire were analyzed using statistical techniques. The collected data was analyzed using 'Statistical Package for

Social Sciences' (SPSS) software version 19.0. Karl Pearson correlation was used to find the nature of relationships among the variables. As a final point, to find out the degree of behavioral change associated with digital persuasion and learning, a simple linear regression model was developed.

6.0 DATA ANALYSIS AND INTERPRETATION

a)   *Respondent's demographic data:*

With respect to Age: The current study draws its findings on data from 113 employees at Teamglobal Logistics across PAN India offices. Among 113 respondents 45.1% were in the age group of 31-40 years, followed by 28.3% who were less than 30 years followed by 21.2% into the age group of 41-50 years and remaining, 5.3% constituted of above 50 years employees. *With respect to occupational status in the company:*
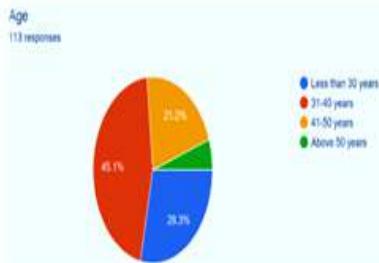
Graph 1: Age of the respondents
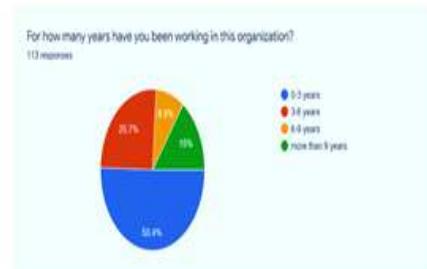
Graph 2: Number of years in organization

Out of the 113 employees, 25.7% of respondents worked for their current organizations for the more than 3 years but less than 6 years. And a majority of 50.4% respondents worked between 0-3 years in the organization. However, there were 15% respondents who have been working for more than 9 years and 8.8% between 6-9 years in the organization.

b)   Descriptive Statistics:

Table 2: Descriptive Statistics for Constructs.

Particulars	Mean	Standard Deviation	N
Behavioral Change	4.1327	.80738	113
Intent content & event of persuasive technology	3.96	.834	113
Persuasive Technology	4.00	.791	113
Interactive Persuasive Technology	4.1504	.81527	113

The independent variable behavioural change had a mean score of 4.13 and SD = 0.80 specified that there are fair learning practices in the organization. Besides, Intent content & event of persuasive technology produced a mean of 3.96 and SD = 0.83, Persuasive Technology with a mean of 4.00 and SD= 0.79 and Interactive Persuasive Technology displayed a mean of 4.15 and SD = 0.81, wherein N= 113 constant for all. Therefore, this implies that employees exhibit a high level of Behavioural change as an effect of Persuasive Learning.

c)   Inferential Statistics:

Pearson's correlation coefficient (r) is a measure of strength of association between two variables. It shows whether variables are related. Correlation can range between -1.0 and +1.0, we need to know its significant value (i.e.; if its occurrence is by chance or if there is a high probability of its actual existence) As for this study, both significance levels of p=0.01 and p=0.05 are generally accepted conventional levels. This indicates that 99 and 95 times out of 100, we can be sure that there is a true or significant correlation between the two variables and there are only 1% or 5% chances that the relationship does not truly exist. The correlation matrix between dependent and independent variables are exhibited in table (3)

Table 3: Correlation

Variables	Test	Digital Persuasion and Learning	Intent content & event of persuasive technology	Persuasive Technology	Interactive Persuasive Technology
Behavioral Change	Pearson Correlation	1	.737	.769	.770
	Sig. (2-tailed)		.000	.000	.000
	N	113	113	113	113

Table 3 above depicted positive correlation between Behavioral Change & Digital Persuasion & Learning. The following results were indicated:

The highest positive correlation in this study was found between Behavioural Change and Interactive Persuasive Technology (r =.770, p<0.01). The second highest correlation was observed with Persuasive Technology (r =.769, p<0.01) and the third highest correlation was found between Behavioural Change and Intent, Content & Event (r =.737, p<0.01) It is understood that learning practices in the organization is very impactful on behavioural change on the employees. In other words, the results indicate that all these variables have significant correlation with employees' behavioural change.

Regression Analysis:

Regression analysis is a technique used for determining the statistical relationship between independent and dependents variables. We have applied linear regression model to test our hypothesis.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.887[a]	.787	.781	.378	.787	134.210	3	109	.000

a. **Predictors:** (Constant), Interactive Persuasive Technology, Persuasive Technology, Intent content & event of persuasive technology.

b. **Dependent** Variable: Behavioural Change.

Therefore, the research can conclude that impact on behavioural change is on the higher side and the nature of the relationship is positive.

Table 5: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	0.23	0.2		1.16	0.25	-0.163	0.622
Intent content & event of persuasive technology	0.59	0.07	0.611	8.9	0	0.46	0.724
	0.15	0.08	0.142	1.86	0.07	-0.009	0.3
Persuasive Technology Interactive Persuasive Technology	0.2	0.08	0.203	2.6	0.01	0.048	0.354
Dependent Variable: Behavioural Change.							
Beta indicates value of standardized regression coefficient. It represents the effect that standard deviation difference in the independent variable would have on the dependent variable in standard deviation (the standardized scores of the dependent variable).							

The value of R Square implies that 78% variation in the dependent variable (Behavioural Change) is because of independent variable Intent content & event of persuasive technology. The value of F (134) implies that the model possesses significant overall strength. This ensures the correctness of the model. On the basis of Beta coefficients, the model implies that Digital Persuasion & Learning causes 61% positive variation (t= 8.895 and also $p<0.001$). Hence, H0 is rejected and H1 which declares that 'The intent, content and event of persuasive technology has an impact on behavioural change' is accepted.

The value of R Square implies that 78% variation in the dependent variable (Behavioural Change) is because of independent variable Persuasive Technology. On the basis of Beta coefficients, the model implies that Digital Persuasion & Learning causes 14% positive variation (t= 8.895 and also p<0.001). Hence, H0 is rejected is rejected and H1 which declares that 'Persuasive technology has a positive impact on behavioural change' is accepted.

The value of R Square implies that 78% variation in the dependent variable (Behavioural Change) is because of independent variable Interactive Persuasive Technology. On the basis of Beta coefficients, the model implies that Digital Persuasion & Learning causes 20% positive variation (t= 2.599 and also p<0.001). Hence, H0 is rejected is rejected and H1 which declares that 'Interactive Persuasive Technology can replicate real world scenario and are engaging' is accepted.

7.0   DISCUSSION ON FINDINGS

The general objective of this research was to assess the impact of Digital Persuasion and Learning on the Behavioral Change at TeamGlobal. Descriptive statistics in the form of means as listed proves that learning is definitely essential in the organization.

Inferential statistics, on the other hand generated tabulated statistics that shows the results of correlations, coefficients and regressions on the data collected from respondents through questionnaire. The above-mentioned result has been drawn after applying linear regression on the collated data in order to check the causal (cause and effect relationship) The probability of f-statistic shows the significance level of the research. As per standards, if the p value is < 0.05, it is significant. In this study, the tables demonstrate p value as 0.000 which is < 0.05 thus this model of research is statistically significant and proves the significant relationship between variables.

The findings of this study are supporting to other research papers on Digital persuasion and learning. Digital Learning is considered as most important practice at TGL, the more employees get persuasive, the more positive

change in their behaviour would be. Learning developed a connect, a sense of ownership and oneness amongst employees, they tend to have affinity, loyalty and courtesy towards the organization.

8.0   CONCLUSION

In the new normal, TGL seem to have readily accepted and become resilient to technology today. Home, workplaces and employees are highly influenced by technology to an extent that it is persuaded to having an impact on their behaviour too.

Digital persuasion, is the technology that has urged to bring in attitudinal changes of behaviours in the employees through interactive persuasive technology and engaging them. It tends to spark an intrinsic motivation in the employee and remove the barriers that restrict them from changing.

Persuasive Technology is interdisciplinary in nature that focuses on the framework, progress and assessment of interactive technologies intended at changing individual's attitudes or behaviours.

Persuasive apps content, intent and event possess features to remind employees, motivate, and help them reach their goals through messages, alerts or notification in a Bluetooth-enabled interface of an app while behavioural change that is being influenced, about doing or not doing something at a specific point in time after being heard to, motivated and so forth. This research has focused on understanding the behavioural impact due to digital persuasion and learning.

Every effective digital product uses theories and practices of persuasion. Games, health apps, mixed reality training scenarios, e-commerce sites, all need to keep individuals engaged, lead them towards a goal, encourage to make a behaviour change, or nudge them along a path. These persuasive apps also need to measure, track and evaluate their own effectiveness. By exploring concepts from psychology and behavioural economics, we

understood how these disciplines currently influence or could influence behavioral aspects.

9.0   MANAGERIAL RECOMMENDATIONS:

The research study at TeamGlobal Logistics have witnessed that the new Persuasive Digital technologies which are explored in the new normal have many benefits in the behavioural pattern change. It is important that while we are moving the globally distributed work spaces and the virtual world, we develop a critical inclination towards more precise persuasion technology based on the TCEB Model proposed by the authors. The limitations of Technology should not be underestimated and therefore learning should be made in comprehensive and blended form. More broadly for the corporates, we must have a strong sense of responsibility and ownership to engage with these technologies as part of the assemblages of practice. Need is to practise the following:

- Critically examining the Digital Persuasive technology and learning and before developing understanding the influence on both knowledge and practice.
- Harnessing the capabilities of Digital technology for Behaviour change in all possible formats is very crucial.
- Establishing interplay between the physical and virtual learnings and Persuasive Technology can be augmented and customized in accordance with the same.
- The Business Partners must collaborate with the technology specialist to understand the Intent, content and event to be created and developed in context of the business.
- Cross pollination of ideas is very important to make the PT work to the full potential.
- Gamifications and engagements should be at the centre of all delivery through Persuasive Technology and equally there must be emphasis on self-monitoring and conditioning.

- The ownership of career progression, skill and knowledge development should not only be vested with HR and the Business Heads but must be with the individual employees.
- There must be explicit debates on the requirements of New Normal and accordingly the changes to be done in the use of these technologies.
- There has to be a regular and frequent review of the impact on the behaviours and performance of the individual employees.
- There is a high requirement of a full-circle feedbacks which also can be automated at the same time through the use of technology.

10.0   LIMITATIONS:

The present study has some limitations. Firstly, the study focused only on a single organization consequently, the outcomes cannot be universally applicable and restricts from generalizing the results in a broader perspective. Thus, a further research can be carried to make the result more general by encompassing more dimensions of digital persuasion and learning and more organizations into the research design. The findings of the research are relatively on a smaller sample size, which indicates it does not represent the entire population. Although there more dimensions of the proposed model, the study studies only three dimensions. Lastly, time constraint in collecting data added to further limitations.

11.0   DIRECTION FOR FUTURE RESEARCH:

Though the research has some limitations that threaten the implication of this research, the study can head to a number of directions. Firstly, interested researchers could conduct longitudinal studies to investigate the changes over time in the new normal. A similar study can be conducted to find out the influences of other digital learning practices. Also, future researchers can examine the relationship among the demographic variables (age, sex, level of education, and years of service). Finally, further investigation can be conducted taking different parameters to find the degree or extent of behavioural impact.

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