

Digitalisation And Its Impact on Indian Postal Service Sector - A Study Using Structural Equation Modelling

D.Bhuvanewari¹, Dr.S. Tamilarasi²,

1. Assistant Professor & Research Scholar, Department of Commerce, College of Science and Humanities, SRM Institute of Science and Technology, bhuvaned@srmist.edu.in

2. Associate Professor & Head, Department of Commerce, College of Science and Humanities, SRM Institute of Science and Technology, tamilars2@srmist.edu.in

Abstract

Digitalisation had made a greater impact all around the world. Transformation of services from tradition way to digitalisation is happening in each and every sector. The postal department and the services providers found there is a need for changes in providing the services in a new way. Department of post with wider network started to digitalising the services initially in the urban regions and further they come up with a project called DARPAN in way of digitalising the services in a rural area. Digitalisation of services should benefit both the customer and also the service provider. There are a few challenges faced by the postal department in implementing the technology in all the branches of post offices. The present study aims to find the technological adoption of employees, issues faced while adopting and the satisfaction in implementing the technology. To arrive the result, the researcher conducted a study by way of collecting the data from the employees of post office in the selected area. The structural equation modelling is being used to analyse the data and the relationship between the study variables.

Keywords: Digitalisation, DAPAN, Structural Equation Modelling

1. INTRODUCTION

Postal sector has been existed for more than thousand years which plays a significant role in the economic development of the nations. Around the world the postal services play an imperative role in performing the activities every day in keeping counties economies and stay connected with the citizens of the nations. India has largest Postal Network in the world with more than 1.5lakhs post offices. With 1,39,000 in rural areas and 23,444 in urban region postal network is connected and rendering the services like mail, parcel and other banking and financial services. After the emergence of privatization & digitalisation, there is a decline in the postal mails and parcel services. They found a substantial competition in the market with the private courier and parcel services companies. The postal service sector is facing inevitable digital transformation in its business in the innovation, digital era and Industry4.0 [1]. Towards the digitisation of financial services, banks

had introduced the ATM, core banking and net banking facilities which makes the postal customers to switch over to the bank. The advancement in Information and Communication Technologies distorting the borderline between the delivery of traditional mail communication to electronic means. Hence, the digitalisation had a great impact on the development of postal market across the countries [2]. As digitalisation plays a vital role in each and every service sector of the world, Postal sector is no-way excused from the process of digitalising their services. Postal department realised that the business over mail and parcel services steadily drops down in recent years. Thus, the postal department has diversified their services in a broader way and found a new opportunity to increase the business and revenue. The non-mail services such as parcel, business letter, financial and logistic services were being concentrated.

Technological improvement of traditional postal services is hastening as both customer and business to adopt the digital

process across various domains and the customer are engrossed to greater expediency, quick service with lower cost [3]. The project Digital Advancement of Rural Post Office for A New India (DARPAN) was implemented in 2017 in aiming to improve and value add to the service quality and also to achieve the “Financial Inclusion” of the rural population in India. In many of the countries postal sector has largest network and connects the largest rural part also, it’s the second largest contributor to the financial inclusion [4]. As part of digitalisation, government has invested 140 million rupees in the project and as of now, more than 43,000 postal branches have migrated to digitalisation process under DARPAN project. The efforts on digitalisation have created an impact in the Indian Postal Services at many levels which has parallelly opened up the space for more competition to private players. The postal operators have more tie-up with private online e-commerce players like Flipkart, and Amazon.

Challenges – New technology and stressed workforce

Technological changes and advancement in postal sector benefit the customer and also the postal employees, on the other side the customer needs to adopts to switch from the traditional manual process to digitalised process. The postal department has different level of employees who do their regular traditional activities which made them to shift to technological related process. The Federation of National Postal Organisation (FNPO) observed that the initiatives were introduced in aim of expanding financial inclusion to diminish the rural-urban divide. But the results are not ostensible because of an integral conflict between the obligation to provide services to the public and the business intent behind the new services. Its is also insisted that the key problem arising due to the lack of adequate infrastructure support provided to the digitalisation move. Due to the initiative of digitalisation the postal employees are expected to carry out their services in a digital platform. Services like savings bank account, cash certificates and even social security payments are delivered in a digital way. However, the duties are expected to deliver by the service staffs at the minimal charges to the customers. The lack of training to the employees affects the service quality

which results in stress for the postal service provider. A per the statement of FNPO Secretary General, Sivakumar, the entire workforce is at stress due to the modernisation of services with inadequate infrastructure and lack of training. Still the employees are ready to adopt the technological changes with adequate facilities and training which will benefit both the customer, employees and society.

2. LITERATURE REVIEW

The digitalisation created a change in the role of postal sectors in EU. The digital transformation of postal sector in EU divides the phases like postal automation, revenue generation, enhancing of core services, and digital transformation (Otsetova, 2019) suggested to the Bulgaria postal operators to adopt new strategies based on the digital needs. Developing nations requires the technological advancement in order to improve the public services. As an aspiring to be a leader, India needs to focus more on the technologies and development and the nation understood this secret and made a Digital India Campaign to develop the communication between government and people through this digitalisation in order to provide essential services in the easiest way (Vijayan, 2019). Digitalisation improves the efficiency of the work being done and supports the services provider to deliver the quality services to the customer. Digitalisation makes transparency in departments, reduces time and leads to ease of delivering the services (Shekond and Gupta, 2018). Owing to the immense use of electronic media, customers demand, challenges over the globalisation, corporatization and liberalisation postal sector should take initiative to convert their services into digital one in order to survive in the market. Highlighting the initiatives of digitalisation concept “Project Arrow” in 2008 where 45 post offices are computerised and 500 post offices are modernised at a initial stage. He also states the more than ten thousand post offices in India were modernised under X1th plan. (Samal, 2013)

3. OBJECTIVES OF THE STUDY

1. To find the impact of digitalisation on postal services among postal employees.
2. To know the challenges faced by postal employees towards digitalisation on postal services

3. To identify the satisfaction level of postal employees on digitalisation of postal services.

4. METHODOLOGY OF THE STUDY

The study has been done based on the primary data which is collected through questionnaire from the employees of postal department in Chengalpattu, Kanchipuram and Chennai districts. The questionnaire focuses on impact, challenges and satisfaction towards the digitalisation of postal services. The significance of the study is to identify how the digitalisation influenced among the postal employees and the changes adopted to deliver the services, the challenges confronted by the employees while implementing the changes and the satisfaction towards the digitalisation of postal services. The postal sector has initiated

the technological changes to cope up with the competitors. As the postal sector benefits both the customer and contribute to the economic development of the nation it is vital to adopt the technology and to find out the impact on the service providers. The respondents are selected at various level of employees to identify how the implementation creates a change at different levels of employees like Superintendent of Post, Assistant Superintendent of Post, Inspector of Posts', Postal Assistant and Branch Post Masters. The Frequency analysis is done to know the percentage of respondents from each category. Further, the regression model is used to analyse the influence of dependent and independent variables such as impact, challenges and satisfaction on digitalisation of postal services. The Structural Equation Modelling is adopted to find the relationship between the study variables.

Research Methodology	Description
Research Design	Descriptive Research
Sample Size and Target Population	260 & Postal Employees
Sampling Techniques	Convenience Sampling
Data Collection	Primary Data : Structured Questionnaire Secondary Data: Internet sources, publications, research articles and journals
Research Instrument	Close-ended Questionnaire using 5-point Likert-scale
Statistical Techniques	Frequency Analysis, Regression Analysis and SEM
Statistical Package and Data Analysis	IBM SPSS by factor analysis using Principle Component Analysis (PCA) to reduce multiple dimension

5. DATA ANALYSIS AND INTREPRETATION

5.1 Frequency Analysis for Demographic Factors

The below table shows the demographic profile of the respondents with various

factors such as Gender, Age, Educational Qualification, Monthly Income and Designation of Postal Employees.

Table 1 showing the frequency analysis of demographic variables

S.No	Particulars	Frequency	Percentage
1	Gender		
	Male	209	80.4
	Female	51	19.6
2	Age		
	25 Yrs - 35 Yrs	198	53.1
	35 yrs - 45 Yrs	60	23.1
	Above 45Yrs	62	23.8
3	Qualification		
	HSC	5	1.9
	UG	135	51.9

	PG	76	29.2
	Professional	44	16.9
4	Monthly Income		
	Below 20K	11	4.2
	20K - 40K	35	13.5
	40K - 50K	65	25.0
	Above 50K	149	57.3
5	Employee Designation		
	Branch Post Master	17	6.5
	POSTAL ASSISTANT	181	69.6
	INSPECTOR OF POST	19	7.3
	Assistant Superintendent of Post	25	9.6
	Superintendent of Post	18	6.9
6	Years of experience		
	5 - 10 Years	54	20.8
	10 - 15 Years	118	45.4
	Above 15 Years	88	33.8

the

Result Discussions: From the above table, it is found that majority of the respondents 80.4% are from Male group with respect to Gender. Further, with regards to Age, the major respondents are between 25years and 35Years with 53.1% and least respondents are from the age group of above 35years and 45years. Further the table illustrates that the majority of the respondents are falling under the qualification of Undergraduate with the percentage of 51.9 followed by postgraduate with the percentage of 29.2. From the table above, it is found that majority respondents are from the income level of more than 50k with high percentage of 57.3% followed by 25% of respondents falls under income level of 40k to 50k whereas the least number of respondents are from income level of below 20k. the table above also depicts that major respondent hold

position of Postal Assistants with the percentage of 69.6% and least respondents are designated with Branch Post Master with 6.5%. According to the factor Year of experience, majority of 118 respondents have 10-15 years of experience and the least majority falls under 5 – 10 years of experience with 20.8%.

6. Research Framework

For the present study, the researcher has intended to identify whether the digitalisation of postal operation creates an impact among the employees. Further, it is significant to know the challenges in implementing and adopting the technological changes which leads to find the level of satisfaction in providing the digital services.



6.1 Hypothesis Construct for SEM

H₃: Adoption of digitalisation in postal services have effect on the challenges faced by the employees.

H₄: Challenges of employees have influence on the satisfaction level of postal employees

6.2 RESULTS AND DISCUSSIONS

6.2.1 Confirmatory Factor Analysis

The study has developed confirmatory analysis in order to confirm the variables which are highly influencing for all the constructs and to test the hypothesis for delivering accurate result. The study consists of Digitalisation of postal services and its impact on employees.

With regards to the Impact of digitalisation, seven statements have been constructed namely IOD1, IOD2, IOD3, IOD4, IOD5, IO6 and IOD7 were used in the confirmatory analysis, among which IOD8 is eliminated due to the less association with the factor. With respect to Challenges variables namely COD1, COD2, CO3, COD4, COD5, COD6 and COD7 were constructed where COD3, COD4 and COD5 had greater impact and those variables are taken for analysing the data: further the Satisfaction included the variables SOD1, SOD2, SOD3, SOD4, SOD5 and SOD6 on which the variables SOD2, SOD3, SOD6 had good association, where SOD1, SO4 and SOD5 are eliminated from the group due to less impact on the factor satisfaction on digitalisation. As per the result

of confirmatory analysis, the researcher has arrived the model indices of CMIN as 2.621 which lies between 1 and 5 (indicates the good model fit), to discuss with the other fit indices it is suggested to have >0.9 that indicates the good model fit with the results of NFI .950, RFI .929, CFI .968 In the case of RMSEA value, it is suggested to have less than 0.05 which indicates the good fit, values between 0.05 and 0.08 are acceptable and the values 0.01 are poor[9], according to the study on validating confirmatory analysis the value of RMSEA (0.07) indicates the acceptable fit for the model[10]. Hence, as per the result derived for RMSEA which is above 0.05 and <0.07 show the model is acceptable.

6.2.2 Reliability Validity and Discriminant Analysis

7. Table 3 shows the Factor Loading, IR, AVR and CR

CONSTRUCTS	VARIABLES	ESTIMATES	ITEM RELIABILITY	DELTA	AVR	CR
SATISFACTION	SOD5	0.903	0.815409	0.184591	0.6731047	0.714476
	SOD3	0.752	0.565504	0.434496		
	SOD2	0.799	0.638401	0.361599		
CHALLENGES	COD2	0.876	0.767376	0.232624	0.8428203	0.853311
	COD3	0.838	0.702244	0.297756		
	COD4	1.029	1.058841	-0.058841		
IMPACT	IOD7	0.818	0.669124	0.330876	0.865568	0.714305
	IOD6	0.9	0.81	0.19		
	IOD5	0.749	0.561001	0.438999		
	IOD4	0.674	0.454276	0.545724		
	IOD3	0.914	0.835396	0.164604		
	IOD2	0.953	0.908209	0.091791		
	IOD1	<u>0.873</u>	0.762129	0.237871		

For this study the reliability and validity ought to be analysed [11]. For performing the reliability, the Item Reliability is obtained by squaring the factor loading or estimates which are extracted from the standard regression weight where the preferred value must be 0.7 or higher. In this situation all the outer loading variables are greater than .0.7 except the variable IOD4 where it has 0.674 which is closer to the value of 0.7. In Discriminant validity, the estimation of Average ought to be 0.5 or more [12]. While testing the validating of factors, the AVE value for Satisfaction .673, Challenges .842 and Impact .865 were obtained

6.2.3 Summary of t statistics of path coefficient

Table 4 shows the statistics of Beta Value, t value and P Value

which supports the model. Further the earlier studies suggest to estimate the Composite Reliability to verify the reliability of the constructs. The CR should have the value of .7 or above and the table 3 indicates the value of CR as 0.7144 in the case of Satisfaction, followed by Challenges and Impact 0.8533 and 0.714 has obtained 0 respectively. By the results of reliability, validity and discriminant analysis, the researcher found that the constructed factors and subsets are supporting the model and favours to build the model for the study.

Dependent		Independent	β	t-value	P Value	Result
CHALLENGES	<---	IMPACT	.076	4.397	***	Support
SATISFY	<---	CHALLENGES	.037	-2.612	.009	Support

Using Structural Equation Model hypothesis testing was done to analyse the proposed model. According to table 4 of standardised coefficient values, Impact of digitalisation ($\beta = 0.76$, $t = 4.397$, $p = 0.000$) positively affects the Challenges of employees as the values are statistically significant. With respect to Challenges of employees ($\beta = 0.37$, $t = -2.612$, $p = 0.009$) it is found that the p value is statistically significant and have the positive relationship with the satisfaction of employees towards digitalisation. Hence, both Hypothesis H_3 and H_4 is proved that they are statistically proved that it supports the proposed model.

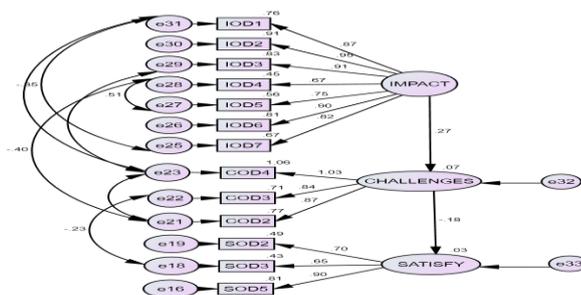
6.2.4 Structural Equation Modelling Fit Assessment

Structural equation modelling is used to analyse whether the model is fit upon the collected data. As per the recommendation of [13], measurement model to test the reliability and validity of the instrument was analysed and structural model was used to analyse the sample using AMOS version 20. To verify the

compatibility of model used for the study and to assess the relationship between variables, the structural equation model is used[14]. The structural equation model evaluates whether the model is fit. According to table 5, the significant p value($p=0.000$) indicates the model does not have a good fit. However, according to Schumaker and Lomax[15], a sample size over 200 could affect the Chi-square statistics which may indicate a significant p value as 0.000, in this study the samples used for the analysis is 260 and hence the model is acceptable with other model indices like CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI and RMSEA. Thus, the study shows the results of CMIN as 2.575, GFI (0.929), AGFI (0.884), NFI (0.950), RFI (0.930), CFI (0.969), TLI (0.956) and RMSEA (0.078). With the above indices almost all the fit indices show the good model fit except AGFI and RMSEA. To discuss with AGFI the value is very much closer to the threshold value of 0.9 and with regards to RMSEA value, it should have below 0.05(good fit) but the value 0.07 indicates the acceptable model fit for the sample.

Table 5 showing the Model Fit Indices

Fit Indices	Fit statistics obtained	Recommended
CMIN/DF	2.575	<0.05
GFI	.929	>0.90
AGFI	.884	>0.90
NFI	.950	>0.90
RFI	.930	>0.90
CFI	.969	>0.90
TLI	.956	>0.90
RMSEA	.078	<0.08



Path Diagram showing the digitalisation and its impact on postal employees

7 CONCLUSION AND FUTURE IMPLICATIONS

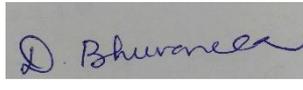
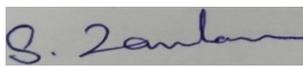
From the present study, the researcher identifies that digitalisation process in postal services has created a greater impact in the work culture of employees. Since from introduction of postal services, the traditional methods were being followed in rendering the services. The changes in the process makes the employees to find difficult in adopting the technology. As per the analysis done on the collected data, many of the employees has less satisfaction towards of digitalization due to less infrastructure provided, poor network connectivity, and lack of proper training. It is recommended to provide adequate devices and facilities to render uninterrupted services and also the postal department requires to conduct training for various levels of employees.

This research paper analysed only the impact, challenges and satisfaction of postal employees with regard to digitalisation. As the

digitalisation has been done in most of the branches in India, the future research can be conducted to analyse the impact of digitalisation and the service quality over the customers of post office. Since more than 15laks post offices in India, the digital performance of postal services can be done at divisional or at the state level.

AUTHORS ACKNOWLEDGEMENT

We the undersigned **Mrs. D.BHUVANESWARI** and **Dr.S.TAMILARASI** of the above-titled paper hereby declares that the work included in the above paper is original and is an outcome of the research carried out by the authors indicated in it. Further, We author(s) declare that the work submitted for SCMS Journal of Indian Management has not been published already or is under consideration for publication in any Journals/Conferences/Symposia/Seminars.

S.No	NAME OF AUTHORS	AFFILIATION	EMAIL ID	SIGNATURE
1.	Mrs.D.BHUVANESWARI	ASSISTANT PROFESSOR IN COMMERCE	bhuvaned@srmist.edu.in	
2.	Dr.S.TAMILARASI	ASSOCIATE PROFESSOR & HEAD IN COMMERCE	tamilars2@srmist.edu.in	

References

- Miroslava Boneva, Challenges related to the digital transformation of business companies, *Proceedings of the 6th International Conference Innovation Management, Entrepreneurship and Sustainability (IMES 2018)*, May 31 – June 1, 2018, Prague, Czech Republic, pp.101 – 114.
- Mária Matúšková, Lucia Madleňáková, The Impact of the Electronic Services to the Universal Postal Services, *16th Conference on Reliability and Statistics in Transportation and Communication, RelStat'2016*, 19-22 October, 2016, Riga, Latvia, *Procedia Engineering* 178, 2017, pp. 258–266
- Dimcheva, G., Factors for Increase of Business Clients' Consumer Satisfaction of Telecommunication Services, *8th International Scientific Conference "Company Diagnostics, Controlling and Logistics "*, Zilina, 2016, pp. 29-34.
- Anna Otsetova, Ekaterina Dudin, Postal Services in Conditions of Fourth Industrial revolution, *International Journal of Advanced Research in IT and Engineering*, Vol. 7 | No. 5| May2018.
- Otsetova, A. (2019). Digital Transformation of Postal Operators – Challenges and Perspectives. *Transport and Communications*, 7(2), 15–20.
<https://doi.org/10.26552/tac.c.2019.2.4>

6. Vijayan, "Digital India – A Road map to Sustainability", International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-5 March, 2019.
7. Sheokand,Gupta, "Digital India Programme And Impact Of Digitization On Indian Economy", Indian Journal of Economics and Development, Vol 5 (5), May 2017.
8. Samal, B. (2013, May 31). future-of-india-post. Retrieved January 1, 2015, from SA Post: <http://sapost.blogspot.in/2013/05/future-of-india-post-written-by-by.html>
9. Chan YH. Biostatistics 103: qualitative data - tests of independence. Singapore Med J. 2003 Oct;44(10):498-503. PMID: 15024452.
10. Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272–299. <https://doi.org/10.1037/1082-989X.4.3.272>
11. Kim, H., Ku, B., Kim, J. Y., Park, Y.-J., & Park, Y.-B. (2016). *Confirmatory and Exploratory Factor Analysis for Validating the Phlegm Pattern Questionnaire for Healthy Subjects*. <https://doi.org/10.1155/2016/2696019>
12. Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *Journal of Strategic Information Systems*, 19(3), 207–228. <https://doi.org/10.1016/j.jsis.2010.05.001>
13. Bagozzi, R. and Yi, Y. (1988) On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Sciences*, 16, 74-94. <http://dx.doi.org/10.1007/BF02723327>
14. Anderson JG, Gerbing DW (1988). Structural Equation Modeling in Practice; a review two step approach. *Psychol. Bull.* 103:411- 423.
15. Peter T (2011). Adoption of Mobile money technology: Structural Equation Modeling Approach. *Eur. J. Bus. Manage.* 3(7):2011.
16. Schumaker RE, Lomax RG (1996). *A Beginner's Guide to Structural Equation Modeling*, Lawrence Erlbaum Associates, Mahwah, NJ