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Editorial

'Development Review' published yearly by the National Academy for Planning and Development is devoted to the study of contemporary issues of development. It contains the dissemination of original views and results of research on contemporary issues. The four articles contained in this volume represent some of the most recent outlooks of committed practitioners in the field of pedagogy, governance, and development studies. The authors of the articles have put their insights into the coeval issues such as online education, national integrity strategy, supply chain management, and e-learning. This collection of referred articles is arrayed from general to specific i.e. from theoretical presentations and overviews to case studies.

I do hope the selection of articles in this volume will provide insights into a range of current and time-worthy issues.



Date: 23 May 2023

Sukesh Kumar Sarker
Director General (Secretary to the Government)

Critically Anatomization of Participants' Complacency using Online Learning Platforms in Bangladesh during the COVID-19 Pandemic

Ullas Chowdhury¹, Tahmidur Rahman^{1*} and Prabir Chandra Debnath²

Abstract:

The infamous global pandemic Coronavirus – popularly known as COVID-19, started first in Wuhan (China) from December 2019, cost millions of lives all over the world, had significantly changed the global landscape, especially in the economy and society. A global pandemic was declared by WHO (UN) in March 2020. In Bangladesh, the virus was first detected on 8th March 2020 and impacted heavily on healthcare and economic progress. The impact on Bangladesh's economy is particularly pronounced because the country relies on globalized supply chains of international fashion brands and human resource exports. The pandemic interrupted socio-economic activities due to the lockdown & shutdown imposed by the government to control the health crisis. In Bangladesh, there are 52 ministries and divisions having more than one million public servants under structured government jurisdiction. These public servants have a noble duty to serve people's purposes. So, their skill development has vitality for the welfare approach of the Government. The COVID-19 crisis made an interruption of this regular activity due to the isolation & lockdown imposed by the government. Realizing these circumstances, NAPD, a national-level training institution, has conducted a number of online training programs to sustain training activities. The traditional face-to-face teaching approach has been transferred to online teaching via digital platforms, which has a significant impact on the quality of education, the interaction between trainer & trainee, the adaptability of the participants, etc. Putting up with user gratification on virtual training platforms in Bangladesh as the study entity, this study operates a structured and questionnaire survey with reality & trustworthiness test and web crawler to gather experience data of online and offline users, constructs a participants' gratification index system by analyzing emotion and the existing literature for quantitative analysis to forecast user gratification. The finding shows that users' private aspects have no direct impact on user satisfaction, while platform availability has the greatest consequence on user satisfaction. Finally, suggestions on improving the online education platform are given to escalate the level of the online education system, so as to promote the reformation of information-based education.

Keywords: Online Education Platform, User Gratification, Information-based Education.

1. Introduction

The learning process all over the world gets momentum when the distance learning approach was initiated in the early 90s. When the COVID-19 wave crashed on people, online teaching and training got much popularity ever. Many experts and scholars including Anderson and Sultan etc. from various countries have performed studies on online education with the vigorous expansion

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of online instruction initiatives. Gofine and Clark ushered the integrations of Slack into their study group of one faculty partner, one analysis coordinator, and around 20 research juniors & Statistics describing how the app's usage was calculated twelve months after its implementation and their results indicating heavy usage by both research professionals and assistants were presented. Thor et al. investigated the impact of the online format on the discussion quality and the survey results showed that students preferred using Voice Thread for presenting, learning from other presentations, and discussing presentation content by performing this process in the classroom. Botelho et al. evaluated the efficacy, ease of usage, ease of understanding, and satisfaction of a cloud-based clinical practice advancement practice document when described in relation to a conventional article method narrative.

The results suggested that a digital clinical book, using free cloud-based collaboration tools, was more useful, easier to use and learn from, and more satisfactory than a traditional paper recording system. Chapman et al. proposed four important dimensions of coverage, participation, quality, and student achievement, and constructed a massive open online course (MOOC) quality assessment framework. Hrastinski put forward a theory in his research: if we wanted to enhance online learning, we needed to enhance online learner participation. Miri and Gizell exhibited in their research the requirement for reevaluating the way traditional online learning morality lessons are formulated and provided; encouraging students to assemble enthusiasm in learning from length, employing them in online learning active and interactive and understandings.

Anderson et al. pointed out that healthcare professionals could share their expertise through online education and incorporate this teaching into their annual learning. Kamali and Kianmehr pointed out that the public's interest in online education was growing, while educational institutions' interest in online education was going down. They held to the perspective that in order to alter the unfavorable consequence of online classes instruction, it was crucial to provide learners with a reasonable network environment, and discussed online education from the perspective of students. Alcorn et al. evaluated satisfaction with online education from the number of class participants, the participation rate of homework, the completion rate, and the improvement of grades. Asarbakhsh and Sars believed that the broken-down system, failed video connection or unusable use affected user satisfaction.

From the perspective of users and designs, David and Glore pointed out visual content was quite important to improve participation and interaction of users. Based on the technology acceptance model and taking 172 online learning users as the objects, Roca et al. analyzed online learning satisfaction. The outcomes exhibited that the user's online education satisfaction was largely committed by the user's perception of the efficacy and quality of the lesson, the quality of the outlet and the website is assistance and the degree of anticipated accomplishment. Lin and Wang believed that students' satisfaction would be influenced by the difference of technology, the characteristics of teachers, students and courses. Panchenko held the view that the MOOC teaching mode could develop teachers' careers, improve teaching skills, and enable teachers to

consider and examine their teaching activities from more perspectives. The literatures found that learners' autonomy played an important role in learning through the empirical study of MOOC.

Through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), Parra-González and Segura-Robles concluded that “game” was regarded as a motivating factor in the educational process, which could promote students to participate in the learning process more actively. According to the above research results, many scholars study online education and establish many evaluation models.

However, in the process of carrying out online educational platforms during this pandemic, many new problems arise in the new form of online education. This requires that new factors affecting user gratification be taken into account in the study. Based on these issues, this paper collects online user comment data to obtain the new factors affecting user gratification and establishes an evaluation system that can better reflect the complacency of online education platforms during the pandemic.

2. Data Collection and Processing

In this paper, data are obtained through web crawler and a questionnaire survey. The online learning data conveyed by web crawler technology is adjustable and matter-of-fact without constraint. Accordingly, this article uses the data acquired by web crawler to make a macro-level analysis of the user knowledge on the existing online learning web education platform and eventually summarizes the leading aspects impacting user knowledge satisfaction.

Although the conventional questionnaires have many constraints, the obtained data are more targeted diverse and abundant, which can examine the scale of consequence characteristics summed up by the crawler data. Accordingly, this article integrates the two techniques to comprehensively obtain online and offline understanding data of users.

3. Research Question and Hypothesis

The face-to-face teaching approach has been converted to online teaching approach via digital mediums, which has significant impact on the quality of education, interaction among trainer & trainee, adaptability of the participants etc. The user gratification measurement in virtual training platforms in Bangladesh and find factors whose impacts on user satisfaction are the prime concern of the study. To satisfy the research question, the study searched whether the user personal factors have any significant impact on gratification or how they are manipulated by platform availability in online trainings during the COVID-19 pandemic.

4. Collecting Comments on Online Teaching Platforms

4.1 Platform Selection

At present, there are a large number of online teaching platforms in Bangladesh, such as Zoom, Google-Meet etc. We are unable to assess all platforms. Thus, it is necessary to select representative platforms to evaluate. In this analysis, data specimens of online learning education media were selected from Zoom & WhatsApp Platforms.

4.2 Collecting Comment Data

NAPD has conducted a foundation training course for the non-cadre officers (SFTC-12th batch) using zoom software for class and whatsapp application for information sharing. The duration of course was 23 may to 21 July, 2021. Therefore, this study collected comments from the participants and course management.

5. Questionnaire Data Collection and Processing

5.1 Questionnaire Design

It is quite intricate to sort out all the effecting factors that may impact an online teaching platform. To acquire a targeted evaluation of user experience, this paper adopted a questionnaire survey, whose main targets were professionals in various government institutions. Through determining and sorting relevant literature, this study was designed the questionnaire with three segments, as demonstrated in Table 1.

Table 1. Area of Questionnaire of the study

Ramification of Inquisition	Content of Inquiry
User's gratification on the online platform	Device access, learning content, Intention to learning.
Primary information	Gender, Educational background, Age, Employment nature
User Experience	Level of gratification, Platform usage, Availability, Perceived value, and Interaction.

In the second part, user experience and level of gratification-related questions used a Likert scale. Here, the scoring system was between 5-1, where 5 indicated strong agreement and 1 determined strong disagreement.

5.2 Validity Test of Questionnaire

During the COVID period, Google Forms was used as a questionnaire survey tool to accumulate information. A total of 50 questionnaires were received, with 42 remaining after the removal of invalid questionnaires. These 42 questionnaires were entered into SPSS statistical software to perform reliability, descriptive analysis, and validity analysis.

5.3 Reliability Test of Questionnaire

The reliability test measures data reliability. The reliability is used to analysis the consistency and stability of data. Cronbach’s ‘ α ’ has been used to analysis the internal consistency of the questionnaire data. Here, Cronbach’s coefficient was between 1 and 0. In general, the value of the coefficient greater than 0.7 emblems that the entrenched questionnaire may pass the consistency test. The dependability test outcomes are illustrated in Table 2. In this questionnaire, six Cronbach’s ‘ α ’ coefficients were all greater than 0.7, indicating that the internal reliability of the questionnaire was high.

Table 2. Questionnaire data for reliability information.

Index	Cronbach’s α Coefficient	Number of Questions
Level of gratification	0.702	5
Intention of usage	0.711	3
Availability of interaction	0.731	4
Quality of service	0.721	2
Platform availability	0.706	3
Intention to learning	0.717	3

5.4 Validity Test of Questionnaire

Here, Content validity and structure validity have been tested in validity test. The structure validity passed the KMO (Kaiser–Meyer–Olkin) test and the Bartlett test. In general, while the significance level of the Bartlett test fulfills the significance requirement of a two-tailed test and KMO is greater than 0.5, it is envisaged that the questionnaire pass the validity test. The outcomes of the validity test are represented in Table 3. It can be seen that Bartlett test of the

six first-level indicators and the test values of the KMO in the questionnaire fulfilled the assertion, apprising that those passed the validity test.

Table 3. Date Validity test

Index	KMO	Bartlett Test of Sphericity
Level of gratification	0.601	0.000
Intention of usage	0.511	0.000
Availability of interaction	0.562	0.000
Quality of service	0.581	0.000
Platform availability	0.700	0.000
Intention to learning	0.514	0.000

5.5 User Sentiment Test

All comments from the participants of NAPD were divided into different topics through data processing. The influencing factors affect user experience, namely platform suitability, platform service type, platform privacy, platform teaching type, platform functionality, platform design environment, and network technology environment. In modern era, different types of electronic devices have been emerged. In addition, to make participants more convenient during online session, the online-platform has to enable to adjust the horizontal and vertical screen any time.

By encapsulating the factors influencing user based experience for online teaching platforms during the COVID pandemic, the following Table 4 is sorted out.

Table 4: Influencing factors in online training

Platform teaching type	“sharing the screen”, “main interface experience”, “horizontal screen”, “verification code”,
Factor	“computer”, “tablet”, “mobile”, “compatibility”
Platform design environment	“microphone”, “vertical screen”, “rotating screen”, “submit homework”, “self-rotating screen”

Platform functionality	“pop-up windows”, “network anomaly”, “bundled software”,
Platform privacy	“online customer service”, “course management service”
Network technology environment	“blank screen”, “load fail”, “system halted”, “network fluctuation”, “lost connection
Platform Suitability	“screen”, “call the camera”, “personal information”

6. Empirical Research on User Gratification

6.1 Creating a User Experience Gratification Index System

This study aims to establish an effective but non-redundant index system based on the factors influencing user experience obtained by emotion. The merits and demerits of online education method were noted by its users in the questionnaire and a large number of documents which are rigorously analyzed on the basis of receiving response from the users.

It amalgamates Web Qual 4.0 (Platform availability, data norm, relations method) and the D&M (DeLone and McLean) system success model (data grade, technique standard & assistance quality) to purify the characterizing arrows. Here, system quality and information quality have been exposed jointly with subjective multiple choice questions, while others are expressed on Likert scales, as illustrated in Table 5.

Evaluation indicators affecting user satisfaction are divided two variables on the basis of primary and secondary domains. Here, the primary and secondary domains are considered to evaluate the user experience complacency which is basically acquired by the emotions of users. At that point, User’s willingness to continue using, Level of gratification, Platform availability, The Quality of Interaction, Information Quality, System Quality, The Quality of Service, Users Personal factors are the primary variables. Recommend to others, Increment the frequency of use, Learning use, Attractive, Learning ability, Measures of the online platform, Ease to browse, Design to interface, Learning record, Learner participation, Practice feedback, Accuracy, Integrity, Timeliness, Concurrent access, Course management, Artificial service, Education level, Use frequency, Satisfaction tendency, Platform choice are the secondary variables.

Table 5. Evaluation indicators affecting user satisfaction

Primary Variable	Secondary Variable	Indicators
User's willingness to continue using	Recommend to others	Loy1—During the COVID-19 pandemic, target the online education platforms you are fully satisfied with their features, technical supports and you may recommend to others.
	Increment the frequency of use	Loy2—During the COVID-19 pandemic, the online teaching platform you are using will be used more in the upcoming era and recommending.
Level of Gratification	Learning use	Sat2—During the COVID-19 pandemic, you think the existing activities of the online teaching platform can fulfill your learning requirements.
	Attractive	Sat3—During the COVID-19 pandemic, you are satisfied with the online teaching platform.
	Learning ability	Sat1—Compared with offline learning, you think remote teaching facility during the COVID-19 pandemic is more attractive.
Platform availability	Measures of the online platform	Pq2—During the COVID-19 pandemic, the measures of the online teaching platform you used are easy to learn.

	Ease to browse	Pq3—During the COVID-19 pandemic, the navigation system of online network you used is lucid, without confusion, and the page is easy to browse.
	Design to interface	Pq1—During the COVID-19 pandemic, the interface design of the online network teaching platform you used is very reasonable.
	Learning record	Pq4— During the COVID-19 pandemic, the online teaching platform you used correctly recorded your learning time, learning content and learning data.
The Quality of Interaction	Learner participation	Int1—During the COVID-19 pandemic, while learning online, you will actively answer the teacher’s questions and participate in the classroom learning.
	Practice feedback	Int2—During the COVID-19 pandemic, you will complete the online study assignment assigned by the teacher on time.
Information Quality	Accuracy	A1—During the COVID-19 pandemic, which of the following difficulties and problems have you encountered while studying online?
	Integrity	A2—During the COVID-19 pandemic, in accordance with your common online teaching platform, what is the main medium to learn online?
	Timeliness	A3—During the COVID-19 pandemic, in the course of online teaching, what online interactions did you mainly participate in?
System Quality	Concurrent Access	A5—During the COVID-19 pandemic, which terminal can the online teaching platform you are using support for online learning?

Continued (Table 5)

The Quality of Service	Course Management	Cq2—During the COVID-19 pandemic, the online teaching platform you use can recommend relevant courses according to what you watch.
	Artificial service	Cq1—During the COVID-19 pandemic, when the online teaching platform fails, the customer service will help you to solve the problem in time.
Users Personal factors	Education level	Per1—What kind of student are you?
	Frequency of use	Per2—How often did you use an online teaching platform before Per3—COVID-19?
	Complacency tendency	When you use the online teaching platform for the first time, you will hold a completely negative attitude towards the platform because of some dissatisfaction with the use of the platform (such as registration trouble, slow login, etc.)
	Platform choice	A6—What platforms will you use as learning aids during and after the COVID-19 pandemic?

6.2 Structural Equation Model

Structural equation modeling (SEM) is a conventional model to unravel multivariable problems in the field of social sciences. In social science, it is required to sort out the inter-relation between concealed variables and more than one dependent variable that might not be directly measured. SEM can estimate abstract hidden variables through observable variables.

In accordance with the above user satisfaction or gratification indicators, this study utilizes the SEM to create the Indicator System Model (ISM) and acquires the significance path coefficient of the hidden variables on user satisfaction. The IS (information systems) success model proposed by DeLone and McLean measured user gratification on a website in terms of the service quality. McKnight and Chervany constructed the factors influencing customer belief and supplier intention from the perspective of psychology and sociology, and each structure was

further decomposed into two to four measures. Lao et al. used text mining technology to establish a curriculum quality evaluation model that included five first-level indicators: curriculum content, instructional design, interface design, media technology, and curriculum management to deliver a base norm for apprentices to assess the quality of the curriculum. Huang et al. constructed an overall evaluation index system based on online education using four primary indices: system structure, educational resources, interactive mode, and market environment.

This study explores the factors which influence user gratification with the use of the aim of online platforms for teaching by examining the four domains of interaction standard, service standard, access or availability, and personal factors the following hypotheses:

Hypothesis 1. The user gratification with the online platform for teaching has a positive influence on the user's willingness to recommence such platform.

Hypothesis 2. The service standard of the online platform for teaching has a positive significance on user gratification.

Hypothesis 3. The personal factor of the online platform for teaching has a negative Significance influence on user satisfaction.

Hypothesis 4. The availability of the online teaching platform has a positive vibe on user satisfaction.

Hypothesis 5. The standard of interaction in the online platform for teaching has a positive significance on user gratification.

6.3 Model Estimation and Significance Test

A SEM can precisely deal with the inter-relation of hidden variables in the speculative model of user gratification of an online platform for teaching. In this research, AMOS (Analysis of Moment Structures, IBM, Armonk, NY, USA) software was utilized to explore the structural equation model.

Based on the validity and reliability analysis of the sample information fulfilled the desired demands. The parameter analysis outcomes of the initial model are represented in Table 6. After measuring the initial model, the significance test of the path coefficient and load coefficient was needed. The "C.R." (critical ratio) value was acquired by the difference between the estimated parameter and standard parameter.

While the absolute value of "C.R." was greater than 1.96 and the corresponding probability p value was less than 0.05, it can be explained that there was a significant difference between the

coefficient and the estimated parameter value of 0 at 95% confidence. That's why it is anticipated that the influence of the coefficient was significant.

Table 6. Parameter analysis outcomes.

Influence Elements	Coefficient	Influence Elements	Estimate	S.E	C.R.	<i>p</i>
User gratification	<—	The standard of interaction	1.000		1.989	***
User gratification	<—	The standard of service	0.389	0.187	2.078	***
User gratification	<—	Platform availability	-0.236	0.224	2.032	***
User gratification	<—	User personal factors		0.382	0.417	
User's willingness to continue using	<—	User gratification	1.000	0.049	5.557	***
The standard of interaction	<—>	The standard of service	0.273			
The standard of service	<—>	Platform availability	0.262	0.042	6.225	***
The standard of interaction	<—>	Platform availability	0.217	0.035	6.276	***
Platform availability	<—>	User personal factors	0.002	0.016	0.102	0.918
The standard of service	<—>	User personal factors	-0.083	0.033	-2.528	0.011
The standard of interaction	<—>	User personal factors	-0.066	0.025	-2.639	0.008

Note that *** emblems the significance level when $p < 0.001$. C.R is the abbreviation of critical ratio. \leftrightarrow reflects the influencing factors are inter-related. \leftarrow indicates a common relationship between the influencing factors. S.E is the abbreviation of Standard Error.

6.4 Modified Structural Equation Model

While the SEM (Structural Equation Model) had been performed, it was utilized to test the fitness degree of the sample data and perform model path analysis by calculating the fitness effecting parameters. In general, there are three specific indices for the fitness degree of a model in AMOS:

1. Absolute fitness index,
2. Value-added fitness index,
3. Simple fitness index.

There are numerous fitness indices in the above mentioned AMOS. But few have been taken on the basis of the requirement, relevancy and compliance of the appraisal. In this research, common fitness indices were taken from the above mentioned three fitness indices, and the calculation results are presented in Table 7.

Table 7. Fitness degree of model.

Indicators		Judgment of Standard	Revised Model Results
Absolute fitness index	χ^2	the smaller the better	127.452
	$\frac{\chi^2}{df}$	1–3	2.360
	GFI	>0.9 better fit >0.8 can accept	0.938
	RMR	<0.0798	0.0546
	RMSEA	<0.0799	0.0689
Value-added fitness index	NFI	>0.9 better fit	0.914
		>0.8 can accept	

	TLI	>0.9	0.915
	CFI	>0.9	0.958
Simple fitness index	PCFI	>0.5	0.623
	PNFI	>0.5	0.606

Here, GFI means goodness-of-fit index; RMSEA means Root Mean Square Error of Approximation, NFI means Normed fit index; CFI means comparative fit index; PNFI means parsimonious normed fit index. χ^2/df is the abbreviation of degree of freedom ratio; RMR means Root Mean Residual; TLI means Nonstandard fitting index; PCFI means Simple adjustment comparison fit index.

7. Results Analysis

By testing and modifying the SEM and studying the sequence proposed by the path coefficients of the influencing factors and the research hypothesis are presented in Table 8.

Table 8. Path coefficients of the affecting factors.

Influence Elements	Path Coefficient	Influence Elements	Affect the Path
User gratification	<—	The standard of interaction	0.238
User gratification	<—	The standard of service	0.329
User gratification	<—	Platform availability	0.703
Pq2	<—	Platform availability	0.41
Continue using			
Int2	<—	The standard of interaction	0.35
Int1	<—	The standard of interaction	0.10
Cq2	<—	The standard of service	0.5
Cq1	<—	The standard of service	0.4
Pq4	<—	Platform availability	0.34

Pq3	<—	Platform availability	0.33
Pq1	<—	Platform availability	0.63
Sat3	<—	User gratification	0.13
Sat2	<—	User gratification	0.64
Sat1	<—	User gratification	0.55
Loy1	<—	User's willingness to continue using	0.55
Loy2	<—	User's willingness to continue using	0.78
The standard of interaction	<->	The standard of service	0.273
The standard of service	<->	Platform availability	0.262
The standard of interaction	<->	Platform availability	0.217

Here,

“<—” depicts a common relationship between the influencing factors,

“<->” reflects the influencing factors are interrelated.

From the above summary, it has been drawn the summary that among the four major factors, personal factors had no significance on user gratification, depicting that users had a strong attitude and were not sentimentally biased rather platform availability had the strong influence on user satisfaction. In terms of availability, the activity design and functional operation of the online platform for teaching were the most pivotal crux. In case of interaction standard, the feedback by the participants assigned by course management was the core factor affecting the cognition of interaction experience. The significance of service standard on user gratification was mainly happened by on time response to problems and diversity of course nature. The online users desired that the online learning platforms could fulfill their learning requirements and render required activities for distant learning. It cannot be denied while the users were using these online based educational platforms for distant learning, they faced few technical problems but at a same time they were elated to receive the facilities of education in lieu of face to face traditional approach.

8. Discussions

Three issues would be discussed here. First of all, it was compared the judgments of relevant publication and discuss the affinity among the existing literatures and this article. Secondly, in order to underline the unique factors that affect the user's gratification of online education & training platforms during the COVID-19 global pandemic, it has been discussed online education system during the COVID-19 pandemic which is also the excellent contribution of this article. Finally, the conclusion of this paper can be used to other countries in the world what we discussed the in section of internationalization of conclusions.

8.1 Characteristics of Online Education during the COVID-19 Pandemic

Before COVID-19, teachers and students were individualistic and chosen online education in a small range. At present, it has become a necessary choice for distance learners. This choice provides a prospect for people to re-examine online education. Therefore, based on the COVID-19 situation, this paper studies the user gratification of online instruction platforms, which is dissimilar from the focus of user gratification under common occasions. According to the judgments of this article, the availability of the platform during the COVID-19 situation is the main factor affecting user gratification, which also reflects that users focus more on mobile terminal equipment, platform load, technology proficiency and other aspects. This study not only summarizes the weaknesses and constraints exposed by the online education platform during the COVID-19 pandemic, but also makes a significant contribution to the upgrading and optimization of online education, improving people's perspective of online education, and increasing the adoption and gratification of online education.

Before COVID-19, the instructors & trainers who provided courses on the online teaching medium system were specially trained by enterprises and only taught for a certain type of course. However, this COVID-19 outbreak is all on a sudden. Instructors who do discuss not use the online education platform are transformed into ordinary offline teachers. The preparation time of ordinary teachers was not enough. In addition, a considerable number of teachers lack sufficient knowledge of information technology, so the concept of online teaching is relatively weak. In the face of sudden online teaching, difficulties emerge, such as how to arrange classes, how to carry out online teaching according to the plan, which online teaching medium to choose, and how to monitor the effects and qualities of online teaching, which will lead to the drop in user gratification.

Therefore, in this study, the consequence of COVID-19 on user gratification is not only in the context of COVID-19, but it is also concluded that the usability of the platform is the main factor affecting users' gratification with the online education platform in pandemic period.

8.2 Internationalization of Conclusions:

The analyses in this paper are based on the user data of NAPD training using online educational platforms during the COVID-19 crisis. In order to carry out the decisions to use these platforms, this segment elucidates whether the research results of this paper can be extended to other corners at international level.

First of all, this paper finds that platform availability is the most important factor affecting the fulfillment of the online instruction platform, while the user personal factors have no significant impact on the gratification. In view of the similar online teaching methods adopted by countries all over the world, most of them adopt the forms of video conferences or live broadcasts. Therefore, the findings can be augmented to all countries in the world.

Secondly, this paper obtains the gratification of evaluation technique and complacency prediction norm of an online educational platform during the COVID-19 pandemic. Because this form of online instruction is still used in other countries, the evaluation system and prediction model obtained in this article can be applied to the other countries that have not yet recovered offline teaching approach.

9. Suggestions & Conclusion:

COVID-19 pandemic has provided a varied understanding in understanding process all over the world. This study collected user experience data on online education platforms during the COVID-19 pandemic. Through data analysis of online user reviews, we extracted the factors influencing satisfaction and established a scientific and effective satisfaction index system using the existing publications. In addition, the data obtained from an offline questionnaire were examined and analyzed, and a structural equation model was built for quantitative analysis of the relationship between various indicators. It was found that users' personal factors had no direct impact on their gratification, while platform availability had the extraordinary effect on user gratification.

Technological difficulties cannot be dismissed. Although an online teaching platform provides available teaching methods, there are always many difficulties in the platform technology. The design environment of the platform should be more concise and easy to operate. In terms of the network technology environment, some platforms frequently meeting problems such as internet lags and network congestion. Technological problems in these platforms are the main factors affecting user experience that lead to students' discontent and significantly reduce the efficiency and quality of teaching. Therefore, improving the platform technology is the primary problem to be solved. As for the above specialized problems of the online education platform, the enterprises that belong to the platform should improve these problems, increase the investment in the online education platform and develop the function of the online system. Companies can

obtain education financing through online crowd funding, initial coin offerings and other means, and use these financing methods to improve the quality and availability of online systems.

The two-way interaction of pedagogy must be improved. Using a questionnaire of offline users, we analyzed first-level indicators selected by the structural equation, and determined that the main factors influencing user gratification with the online teaching platforms were procedure quality, interaction quality, service quality, and platform availability. Interaction atmosphere refers to the effective transmission atmosphere in the process of knowledge acquisition. An increase in interaction can enhance students' learning confidence and engagement. In a conventional classroom, there are various teaching interaction modes, such as backward classroom, random inquiries, and group statements. However, in a web atmosphere, the platform has few settings for teaching interaction like chat rooms in Zoom, and teachers' input teaching is the main training mode. Accordingly, the platform must actively develop various interactive formats, such as 'you ask me to answer', 'face to face', 'students record learning videos' and 'real-time data lecture' to promote efficient understanding and further improve the quality of education. Moreover, trainer should have choices to identify inattentive learners so that punitive measures can be carried smoothly.

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Perceptions on the Effectiveness of National Integrity Strategy in Promoting Good Governance: A Study on Ministry and Department Levels in Bangladesh

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Abstract

The Government of Bangladesh is committed to establish rule of law, human rights, corruption free society, freedom of citizens according to the constitution, equality and justice in the country. Government believes that an inclusive approach based on values, morals, ethics and integrity is necessary for good governance. In this regard, the Government approved a 'National Integrity Strategy' (NIS) in 2012. It is a comprehensive set of goals, strategies and action plans aimed at increasing the level of independence to perform, ensure accountability, efficiency, transparency and effectiveness of state and non-state institutions in a sustained manner over a period of time. The Ministries/Divisions and their departments, constitutional authorities and statutory bodies are executing the NIS in their offices. The present study intends to find out whether all areas of the NIS are being covered in the selected ministry and department levels, what are the contributions of the NIS towards promoting good governance and what are the challenges in implementing the NIS.

Keywords: NIS, Effectiveness, Good Governance, Corruption, Service Simplification, Bangladesh.

1. Introduction

Bangladesh has made extraordinary progress in reducing poverty, supported by sustained economic growth. Life expectancy, health care, literacy rates, women empowerment and per capita food production have increased significantly. Progress has been underpinned by steady growth in GDP. Bangladesh reached the lower middle-income country status in 2015 (World Bank, 2020). The Government cherishes to turn the country into a 'Digital' one by implementing the Vision 2021 and thus a middle income country by 2021 (GoB, 2015). The Government also desires to make Bangladesh a Smart one by 2041 that means inclusiveness of the people and Smart Bangladesh will be built based on 4 pillars- Smart Citizens, Smart Government, Smart Economy and Smart Society. Smart Bangladesh is regarded as a major step on the road to realize Bangabandhu's dream of Golden Bangladesh (GoB, 2023). Vision 2021 places strong emphasis on establishing a legacy of good governance by focusing on three fundamental principles of governance: ensuring the rule of law, avoiding political partisanship and building a society free from corruption. Government also aspires to have a developed Bangladesh by 2041 with per capita income of over USD 12,500 in today's prices for which requires (i) governance; (ii) democratization; (iii) decentralization and (iv) capacity building (GED, 2020a). The Government is also committed to achieve the Sustainable Development Goals (SDGs) 2030 of the United Nations as per mandate.

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The country has a long term visionary plan known as ‘Bangladesh Delta Plan 2100’ for achieving a safe, resilient and prosperous Bangladesh and ensure a bright future for generations to come (GED, 2018).

The second Perspective Plan 2021-2041 of the Government creates the way to make Bangladesh an upper middle income country by 2031 and a prosperous country by 2041 when the country will celebrate the platinum jubilee of its birth (GED, 2020a). The Eighth Five Year Plan (July 2020-June 2025) strives for completing the agenda of achieving the social as well as economic transformation that has been visualized in the second Perspective Plan of Bangladesh 2021-2041, attaining the Sustainable Development Goals (SDGs), and realizing the Delta Plan 2100 to create a smooth transition after the LDC graduation (GED, 2020b).

Despite enormous improvement in different areas corruption, misuse of public money, lack of transparency and accountability, harassment of citizens by service providers etc. are very frequent since the emergence of Bangladesh. In general, corruption erodes the institutional capacity of government and ruins democratic values, discourages investment, damages fair competition, raise up business operational costs, discards corporate reputation, diverts essential public resources away from their rational uses and damages development activities which all together impose direct costs on society and increase the sufferings of the mass-people (GoB, 2013).

Therefore, there are concerns for ethics and standards in public life, and strategies to control corruption are now almost global and central to democratic governance and management of public services (OECD, 1999 & 2000; Hoddes et al., 2001). There are now increasing recognitions in governments around the globe to combine measures for combating corruption into their governance agenda. The Government of Bangladesh has also realized and recognized that corruption is a major deterrent against growth and development and is inhibiting the achievement of the commitment. Hence, the Government of Bangladesh believes that an inclusive approach based on values, morals, ethics and integrity is necessary (GoB, 2012a). The National Integrity Strategy captures this approach to help prevent corruption and enhance good governance. Keeping these in mind Government of Bangladesh has approved the National Integrity Strategy (NIS) in October 2012 with a view to establishing a ‘happy-prosperous Golden Bengal’ as dreamt by the Father of the Nation Bangabandhu Sheikh Mujibur Rahman and that is the ultimate destination as a nation and society.

2. Background of the Study

Corruption of public institutions has a significant impact on overall performance and improvement of governance. The economy of Bangladesh appears to have reached a stable state but governance deficits have significant implications for installing an effective national integrity system. The Government recognizes that corruption has emerged as a key barrier against growth

and development in the country and is inhibiting the success of the nation (GoB 2012b). According to Corruption Perceptions Index (CPI), Bangladesh taking the 3rd position in 2006, 7th position in 2007, 10th position in 2008, 13th in 2011 and 15th in 2016 (TIB, 2017). It is mentionable that Government of Bangladesh refused the report of TIB and raised question of its neutrality. The present Government takes ‘Zero’ tolerance approach against corruption and wants to reducing corruption in every sector. Subsequently, the Government thinks that the report of TIB did not reflect the real scenario.

On the other hand, Government views that fight against corruption cannot be conquered by prosecution alone, an inclusive approach based on values, morals, ethics and integrity in addition to laws is requisite. Bearing these in mind Government has adopted the NIS that aims to prevent corruption in the society and the state. In facilitating application of NIS, the Government wishes to engage not only the state institutions but also the non-state institutions. The Government has opted for NIS as a policy and strategy document that deals with a rational choice of vision-driven and goal-oriented strategies across institutions, making use of good practices tested elsewhere (GoB, 2008).

Government has been practicing integrity at different areas. Ministries and departments are executing the strategy at their levels and also in the field offices. Already many years have passed after approval of the NIS; therefore, it is time to find out the effectiveness of the NIS towards promoting good governance at ministry and department levels.

3. Rationale of the Study

Governance is a process that takes place at different levels where institutions and their actors plays the critical roles (World Bank Group, 2017). UNDP also stresses on building capacities for development (UNDP, 2015). Nobel laureate economist Douglass North (1991) abridged the role of institutions, “institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)” (GED, 2020a).

Promotion of good governance based on certain generally accepted core principles is a major responsibility of the government. These core principles include accountability, transparency, fairness, efficiency, participation and decency (ESCAP, 2008). Effectiveness of government organizations is crucial for good governance through which a country can attain its policy targets as well as development goals. The governance issues, predominantly the quality of government institutions, have central implications for long-term economic growth and poverty reduction in Bangladesh. The institutions of the state and administration, therefore, should be freed from partisan influence and from corruption. For all these the Government is keen to ensure all out

efforts to enhance competence and professional ethics in the civil service using sanction for performance during the Perspective Plan period and thus the basis of appointment and promotion will be performance, commitment, efficiency, honesty and loyalty to the Republic (GoB, 2012b).

The 7th Five Year Plan (2016-2020) stressed on strengthening public administration, public institutions and governance issues. As it states, “Effective implementation of programmes and policies in the 7th Plan demands focused attention to good governance, by raising public administration capacity and productivity, while ensuring effectual monitoring and evaluation of public sector programmes”. The 8th Five Year Plan intends to further strengthen the democratic governance process with view to ensuring participation of all the citizens as well as the in-depth functioning of entire democratic institutions (GED, 2020b).

Precisely, to fulfill the dreams of the nation requires good governance and corruption free administration with a view to managing huge population, best use of natural and human resources, managing public and private sector as well as executing Governmental development agenda. Therefore, to achieve the set goals and objectives Government has undertaken certain reform agenda like NIS to strengthen the governance and thus a corruption free country where citizens will enjoy democratic rights and receive services easily. Government expects to ensure good governance through strategies like NIS. The study intends to find out the effectiveness of the NIS in ensuring good governance.

4. Objectives of the Study

The objectives of the study are to-

- i. examine whether the areas of the National Integrity Strategy are being included at ministry and departmental levels for promoting good governance;
- ii. identify the contribution of the National Integrity Strategy in reducing corruption, promoting integrity and service simplification; and
- iii. determine the challenges in implementing the National Integrity Strategy appropriately at ministry and department levels.

5. Methodology and Sample Framework

Both primary and secondary data has been used for the research. Qualitative and Quantitative approach has been adopted to explore a variety of issues related to the National Integrity Strategy. Primary data has been collected through a semi-structured interview schedule. The interview schedule for collection of data has been finalized after a pre-test. Observation technique has also been adopted for data collection. Furthermore, 2 Focus Group Discussions have been held combining all sorts of stakeholders in addition to the sample for data collection.

Data has been collected from Ministry of Education (Secondary and Higher Education Division, and Technical and Madrasa Education Division), and Ministry of Health and Family Planning

(Health Services Division, Medical Education and Family Welfare Division), Ministry of Social Welfare, and the Local Government Division of LGRD Ministry and from their departments. A total of 131 respondents have been interviewed as primary sources of data. Among them, 37 were from the 4 ministries/divisions, 49 from department level officials of the selected ministries/divisions and 45 were from the service recipients. Among the service recipients, 10 from ministry of Education (Directorate General of Secondary and Higher Education, Directorate of Technical Education, Directorate of Madrasha Education, Education Engineering Department, BANBEIS, Bangladesh Technical Education Board); 7 from Ministry of Health and Family Planning (Health Services Division, Health Education and Family Welfare Division); 24 from Local Government Division (Dhaka South City Corporation, Dhaka North City Corporation, Barishal City Corporation, Rajshahi City Corporation, Dhaka WASA, Rajshahi WASA, NILG and LGED) and 4 from Ministry of Social Welfare (National Foundation for Disability Development, National Social Welfare Council). The interview from service recipients were taken when they came to get services from the mentioned institutions during the study.

To have the real representation necessary information has been collected from their various documents and websites. Purposive Sampling Technique has been used for data collection. All data have been quantified and thereafter analyzed through frequencies, tables and diagrams. Statistical software SPSS has been used in the research work.

6. Limitation of the Study

The study has been carried out with a view to finding out the effectiveness of the NIS towards promoting good governance at ministry and department levels. Due to time and budget constraint all the ministries and their departments have not been possible to cover. As NIS is a new concept in Bangladesh, many of the respondents do not have clear concept and therefore, it was difficult and challenging to find out detail data.

7. Literature Review

7.1 Implementation of Integrity Strategy around the World

Many countries of the world have adopted integrity strategy in diverse names. Such as Japan has enacted National Public Service Ethics Act 1999, Malaysia has its National Integrity Plan 2004, Brazil has formulated Public Sector Integrity in 2010, Canada has formed Public Sector Integrity Commission in 2007, Uganda has formulated National Strategy to Fight Corruption and Rebuild Ethics & Integrity (2008-2013) and Kenya has formulated Kenya Integrity Plan 2015-19. Singapore has turned into a country of the lowest levels of corruption in the world and could change its image into a symbol of good governance in Asia because mainly of its National Integrity Strategy.

7.2 Bangladesh Perspectives

Article 11 of the Constitution of Bangladesh states “The Republic shall be a democracy in which fundamental human rights and freedom and respect for the dignity and worth of the human person shall be guaranteed” (GoB, 2010). The present Government of Bangladesh has adopted the challenge of establishing good governance and fighting corruption critically as part of its election pledge realization as it came to the power in 2009.

The Government approved the NIS in October 2012 which visions 'Happy-prosperous Golden Bengal' through its mission on 'establishment of good governance in the state institutions and society'. Inspired by the achievement of the National Integrity Strategy in other Asian countries and around the globe as well as from the commitment to its people and as a signatory to UNCAC, the Government of Bangladesh has opted for its first NIS policy document (GoB, 2013). Simultaneously, the Government is committed to the resolutions of United Nations on anti-corruption.

All these issues encouraged the Government to adopt the NIS for promoting good governance and integrity as well as prevention of corruption. Government believes that only legal aspects cannot ensure good governance and diminish corruption, rather it requires a holistic approach combining integrity at state and non-state institution level. The NIS has thus become an integrated approach to promote good governance and shrink corruption in the country.

7.3 Institutions Covered in the NIS

National Integrity Strategy covers 10 state institutions and 6 non-state organizations. State institutions are: (1) Executives and Public Administration, (2) Parliament, (3) Judiciary, (4) Election Commission, (5) Attorney-General, (6) Public Service Commission, (7) Comptroller and Auditor-General, (8) Ombudsman, (9) Anti-Corruption Commission, and (10) Local Government Institutions. Non-state organizations covered in this strategy are (1) political parties, (2) industrial and commercial organizations in the private sector, (3) NGOs and civil society, (4) family, (5) educational institutions, and (6) media.

7.4 Institutional Arrangements for Implementation of NIS

To oversee the implementation of the NIS, a National Integrity Advisory Council (NIAC) has been formed headed by the Honourable Prime Minister of the Government of the People's Republic of Bangladesh. Other members of the NIAC are a number of Ministers, a few parliament members, representatives of Constitutional Organizations, Cabinet Secretary, a number of Secretaries, representatives of NGO and Civil Societies, Mass Media and a few members of commerce and industries sector. To assist the NIAC there is an executive committee headed by the Finance Minister. The Cabinet Division has a National Integrity Implementation

Unit headed by the Secretary (Coordination and Reforms). The unit is responsible to monitor the implementation of the NIS at different levels.

There is an Ethics Committee chaired by the Secretary in every ministry/division level. There is also an Ethics Committee at department/organization levels comprising of 3 to 5 members for execution of NIS headed by the head of the department/organization. Among the members one-member works as Focal Point. The field level offices also have separate Ethics Committee consisting of 3 to 5 members as per circular of the Cabinet Division.

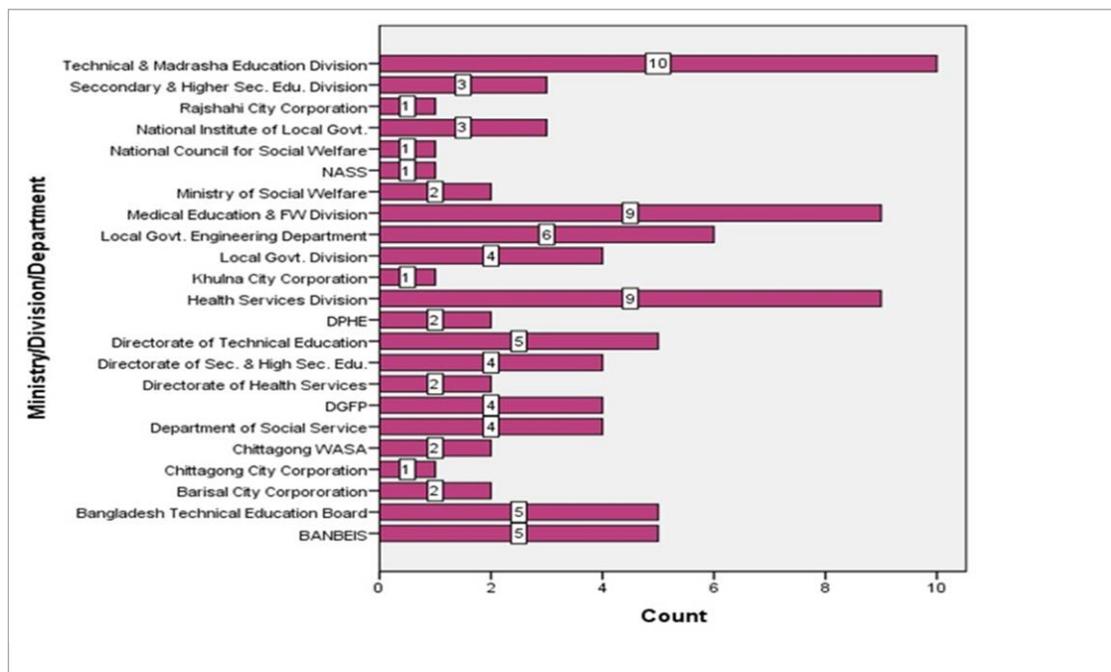
The Cabinet Division’s responsibility is to monitor the results from ministries, divisions, and selected institutions and check the overall advancement of the NIS. Monitoring is to be done at every three months. The report is to be sent to Cabinet Division. The Cabinet Division sends report combining feedback to the Executive Committee of the National Integrity Advisory Council.

8. Discussion and Analysis

8.1 Sample and Gender Distribution of the Study

Total number of respondents was 131 for primary source of data collection. Among them 86 were the officials of Ministry of Education, Ministry of Social Welfare, Ministry of Health and Family Planning and Local Government Division of LGRD Ministry and their Departments and 45 were the service recipients of the ministries and their departments. The distribution of the sample size of officials is shown in Figure 1. To make the study more valuable and effective, 45 service recipients were also interviewed. They have received services before and after the introduction of NIS or usually receive services from the selected ministries and departments.

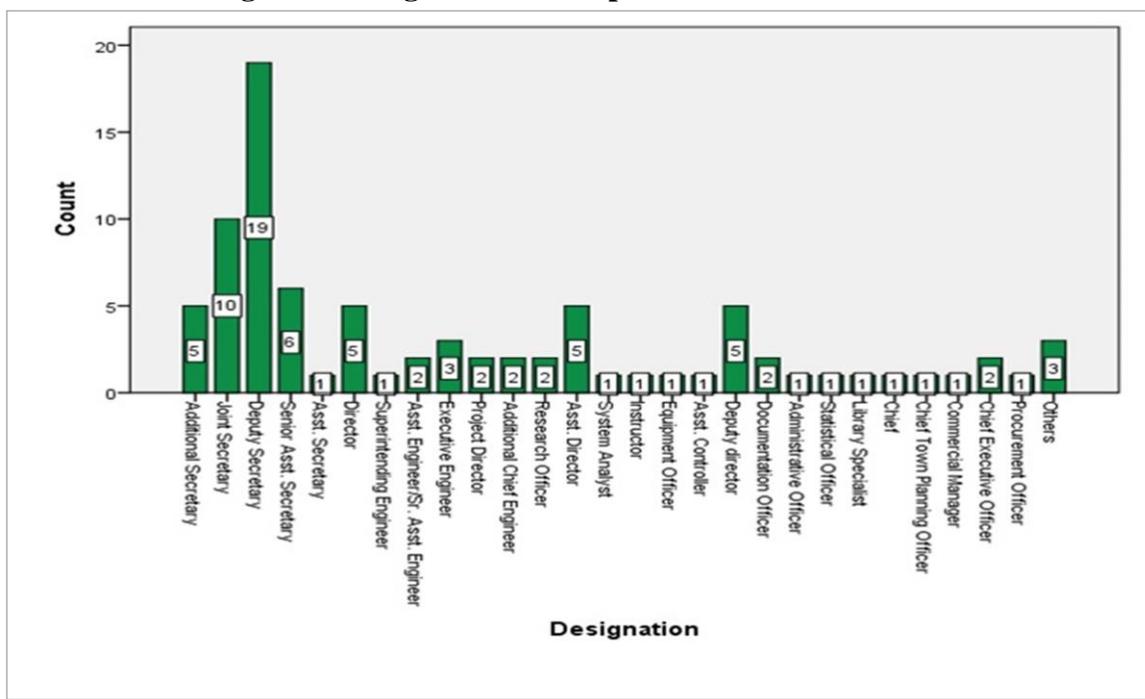
Figure 1: Ministry and Department wise representation of the respondents



Both male and female officials and service recipients were covered to make the sample representative. Among 86 officials of the ministries/divisions and departments 81.40% were male and 18.60% were female while 93.33% service recipients were male and 6.67% were female.

Among 86 official respondents, there is Assistant Secretary to Additional Secretaries, Directors, Superintending Engineer, Senior/Assistant Engineers, Executive Engineers, Project Directors, Additional Chief Engineers, Research Officers, Assistant Directors, System Analyst and from other designated officers (Figure 2). On the other hand, among the service recipients there were employee, student, teacher, soldier, business man, contractor, house caretaker, housewife, mayor municipality and UP Secretaries.

Figure 2: Designation wise representation of the officials



Source: Interview of Ministry and Department Level Officials, 2017

8.2 Officials’ View on NIS Areas Coverage at Ministry and Department Levels

The NIS has identified 116 action plans for different state and non-state organizations with view to improving the overall condition of governance of public organizations (GoB, 2012a). Among them 12 areas have been identified for public administration and among the 12 areas 8 areas are related to the selected 4 ministries/division and their attached departments of the study. The other 4 areas not-related with the selected ministries/divisions are promulgation of whistle blowers protection act, introduction of separate inquiry unit,

modernization of land management and implementation of land use plan and prevention of food adulteration.

With a view to have an idea, the officials were asked whether the areas of the NIS are being covered or not in their ministries/divisions and departments with view to promoting good governance. Amongst the officials, 95.35% of them replied that the areas of the NIS have been covered in their ministries and departments while 4.65% respondents replied negatively.

The officials were also asked to identify the areas of the NIS covered in their ministries and departments. It is found from their responses that among the 86 respondents highest 83.72% officials identified the area (among 6 areas marked in Table 1) submitting income and asset statement to the concerned authority as per law has been covered in the ministry and department level and then the second highest 80.23% officials identified establishing infrastructure for ICT with a view to introducing e-governance areas as covered in their organizations. And among the related 8 areas (Table 1 serial 7 to 14) highest 90.70% respondents identified the area increase of responsiveness towards public requirement and demand as covered in their Ministries/Divisions and Departments.

Table-1: Coverage of NIS areas at Ministry and Department level*

Sl. No.	Areas of NIS	Local Government Division & Dpts	Ministry of Education & Dpts	Ministry of Social Welfare & DPTS	Ministry of Health & Family Welfare & Dpts	Total No. of Responses	Percentage
1.	Development of career plan	12	15	13	9	49	56.98
2.	Introduction of annual participatory performance evaluation system	6	14	10	9	39	45.35
3.	Submitting income and asset statement	12	20	17	23	72	83.72
4.	Higher salary and facilities for officials and staffs	6	15	13	24	58	67.44
5.	Establishing infrastructure for ICT with view to introducing e-governance	12	21	14	22	69	80.23
6.	Introduction of grievance redress system	10	16	13	23	62	72.09
7.	Use of ICT and service simplification	17	22	16	22	77	89.53
8.	Ensuring appointment in the vacant posts of officials and staffs	12	18	13	16	59	68.60
9.	Conducting on the job training and enhancing capacity of training institutions	14	19	15	22	70	81.39
10.	Mobilization against corruption and monitoring anti-corruption activities	13	20	12	21	66	76.74

Sl. No.	Areas of NIS	Local Government Division & Dpts	Ministry of Education & Dpts	Ministry of Social Welfare & DPTS	Ministry of Health & Family Welfare & Dpts	Total No. of Responses	Percentage
11.	Development of rules and regulations	11	21	15	22	69	80.23
12.	Change of laws and methods and formulating new laws (if necessary)	8	19	14	21	62	72.09
13.	Increase of responsiveness towards public requirement and demand	19	21	15	23	78	90.70
14.	Activation of Ethics committee and NIS Focal Point	17	19	15	23	74	86.04

*Note: Multiple answers have been considered.

Source: Interview of Ministry and Department Level Officials, 2017

8.3 Contribution of NIS in Promoting Integrity

One of the major aims of the NIS is to promote integrity of the public employees as laws alone cannot ensure good governance and prevention of corruption. From this perspective the respondents were asked how the NIS is contributing in promoting integrity at ministry and department level. Among the 86 officials 91.86% responded positively while 6.97% replied as no comment and 1.16% as no contribution (Table 2).

Table-2: Officials' view on contribution of NIS in promoting integrity at Ministry and Department level*

Sl	Opinion of the Respondents	Number of Responses	Percentage
1.	Creating awareness and motivating employees in coordination meeting to perform responsibilities with honesty and integrity	55	63.95
2.	Increasing dutifulness of the employees	14	16.27
3.	Inspire for time bound activities/work plan	12	13.95
4.	Increase scope of capacity development through training	10	11.63
5.	Reduce/prevent corruption of the employees through awareness building against corruption	10	11.63
6.	Change traditional mindset for quick service delivery to the citizens	8	9.30
7.	Increase the sense of responsibility, accountability and transparency	20	23.26
8.	Increasing accountability in the activities of the employees	7	

9.	ICT based/online service/automation for quick service delivery to the clients like e-tender and Service simplification	8	9.30
10.	Monitoring and evaluating strictly the activities of the employees and NIS work plan	12	13.95

*Note: Multiple answers have been considered.

Source: Interview of Ministry and Department Level Officials, 2017

Simultaneously the service recipients were also asked whether NIS is contributing or not contributing in promoting integrity in the service providing organizations they received/receive services. Amongst the respondents, 80% of them replied positively and 15.56% participants did not reply, 2.22% had no comment and 2.22% said that it had no contribution. Amongst those replied positively, 26.67% of them bear the perception that NIS motivates employees in creating positive mindset to quick service delivery to the citizens and 24.44% think that NIS encourages service simplification and e-service (Table 3).

Table- 3: Service recipients' view on contribution of NIS in Promoting Integrity at Ministry and Department Level*

Sl.	Service Recipients' View	No. of Responses	Percentage
1.	Motivate employees in creating positive mindset to quick service delivery to the citizens	12	26.67
2.	Encourage service simplification and e-service like online tender	11	24.44
3.	Develop ethics and increase dutifulness of the employees	8	17.78
4.	Creating awareness to public about NIS	8	17.78
5.	Pay attention to service recipients on giving information to solve problems and direct help/increase responsiveness of the employees	5	11.11
6.	Ensure transparency and accountability of the employees	4	8.88
7.	Develops honesty, aware people against corruption and focus citizen	5	11.11
8.	Reduce tadbir, time, cost, visit and friendly work environment	8	17.78

*Note: Multiple answers have been considered.

Source: Interview of Service Recipients, 2017

8.4 Respondents' View on Service Simplification

Service simplification helps in reducing steps, time, costs, visits and hassles of the service recipients. Amongst the officials, 90.70% of them opined that service simplification has taken place to promote good governance and prevention of corruption in their ministries and departments while 9.30% respondents replied negatively. On the other hand, 62.22% service recipients replied positively and 37.78% replied negatively as they think that service simplification has not taken place in the organizations they received/receive services.

8.5 Role of Service Simplification in Ensuring Integrity and Preventing Corruption

Simultaneously, the official respondents were asked on how service simplification helps in ensuring integrity and preventing corruption. A variety of answers have been found from the respondents which have been summarized in Table 4. Among the officials replied positively, highest 34.88% opined that service simplification reduces face to face interaction or human attachment which reduces corruption and hassles.

Table- 4: Officials' view on how service simplification helps in ensuring integrity and preventing corruption*

Sl.	Officials' View	No. of Responses	Percentage
1.	Reduces face to face interaction or human attachment	30	34.88
2.	Reduce time	23	26.74
3.	Reduce the steps of service delivery	18	20.93
4.	Reduce cost	15	17.44
5.	Reduce visits	11	12.79
6.	Reduce middle man	11	12.79
7.	Discourage employees to do corruption	9	10.47
8.	Rapid responsiveness for solution of any problem	5	5.81
9.	Taking services to the doorsteps of the people	4	4.65
10.	Change traditional mind set of the employees	3	3.49

*Note: Multiple answers have been considered.

Source: Interview of Ministry and Department Level Officials, 2017

Concurrently, the service recipients were also asked to give opinion on how service simplification helps in ensuring integrity and preventing corruption in the service providing organizations (Table 5).

Table- 5: Service recipients’ view on how service simplification helps in ensuring integrity and preventing corruption *

Sl.	Service Recipients’ View	No. of Responses	Percentage
1.	Reduce face to face interaction that reduce corruption	25	55.55
2.	Reduce time, cost and visit that reduce harassment/hassle	19	42.22
3.	Reduce steps in service delivery	16	35.55
4.	Rapid responsiveness of the organization (e.g. help desk)	5	11.11
5.	Develop ethics and reduce tadbir	4	8.88
6.	Ensure accountability and transparency	1	2.22

*Note: Multiple answers have been considered.

Source: Interview of Service Recipients, 2017

It is to be noted that use of ICT for service simplification in the service delivery process reduce face to face interaction or human attachment which reduce corruption and hassles of the citizens and the respondents both officials and service recipients have the same opinion on it. For instance, the use of ICT like notice/office order/circular/Government Order/tender/registration, admission, result publication, Monthly Payment Order application for teachers and in other cases can easily reduce or even remove corruption absolutely.

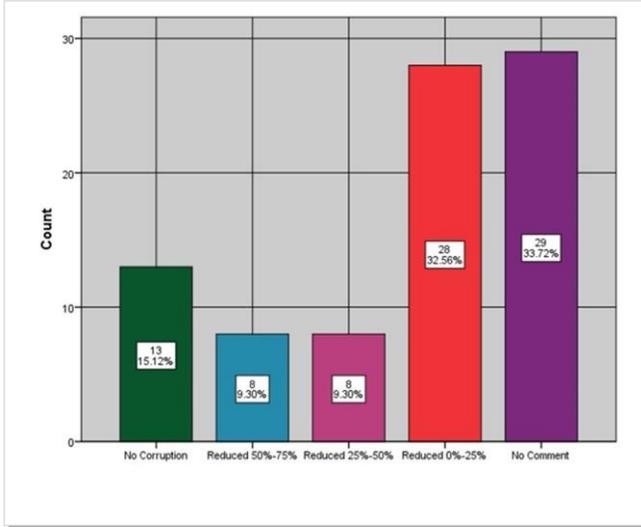
8.6 Respondents’ View on Reduction of Corruption after Implementation of NIS

The study intends to find out the contribution of the National Integrity Strategy in reducing corruption at ministry and department levels. 15.12% of the officials believe that there is no corruption in their organization, 9.30% of the officials think that corruption has been reduced around 50 to 75%, similar number officials think that corruption has been reduced around 25 to 50% while the highest number of officials 33.72% placed no comment over the matter (Figure 3).

On the contrary, 4.44% of the service recipients think that there is no corruption in the organizations from where they have received or receive services while 17.78% think that corruption has been reduced around 50 to 75% and 20% think that corruption has been reduced around 25 to 50% and the highest number service recipients 42.22% think that corruption has

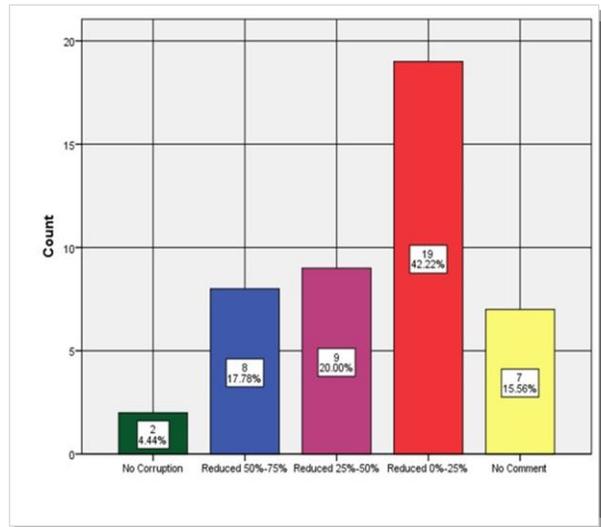
been reduced less than 25%. 15.56% of the service recipients said that they had no comment over the issue (Figure 4).

Figure 3: Officials' view on reduction of corruption after formulation and implementation of NIS



Source: Interview of Ministry and Department Level Officials, 2017

Figure 4: Service recipients' view on reduction of corruption after formulation and implementation of NIS



Source: Interview of Service Recipients, 2017

Figures 3 and 4 indicate that corruption has been reduced in the ministries and departments. There is a similarity regarding opinions of the officials and service recipients on reduction of corruption which is a good sign for the country. But what is significant is that a large number of

officials (33.72%) placed no comment over the issue and 32.56% of the officials think that corruption has been reduced less than 25 which are very marginal and the range is high. On the other hand, 42.22% of the service recipients think that corruption has been reduced less than 25% and the same remark is applicable here.

8.7 Increase of Dutifulness and Honesty of the Public Employees after NIS introduced

One of the purposes of introducing the NIS is to increase dutifulness and honesty of the public employees, precondition for integrity practices which expedite good governance and anti-corruption activities. Figure 5 shows that 19.77% of the respondents think that the increase is around 30 to 50% and 20.93% respondents think that the increase is around 50 to 70% while 10.47% respondents think that the dutifulness and honesty of the public employees remained the same compared to the time.

On the other hand, 17.78% of the service recipients think that the increase is around 30 to 50%, 24.44% of the service recipients think that the increase is around 50 to 70% while 6.67% service recipients had no comment over the matter (Figure 6).

Figure 5: Officials’ view on increase of dutifulness and honesty compared to times when NIS was incepted

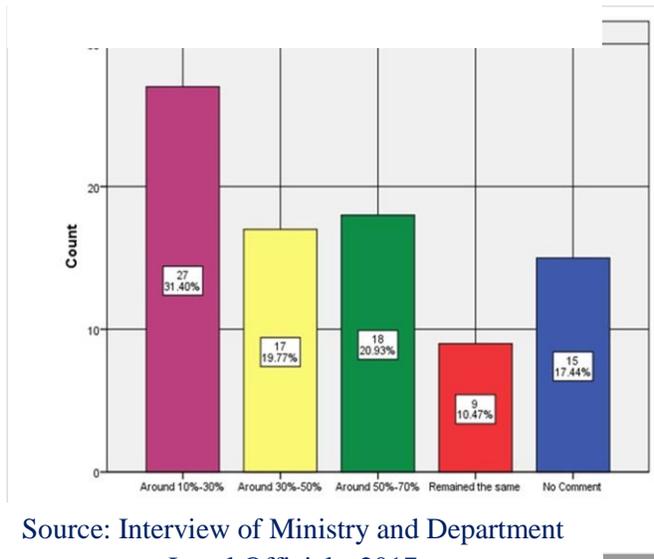
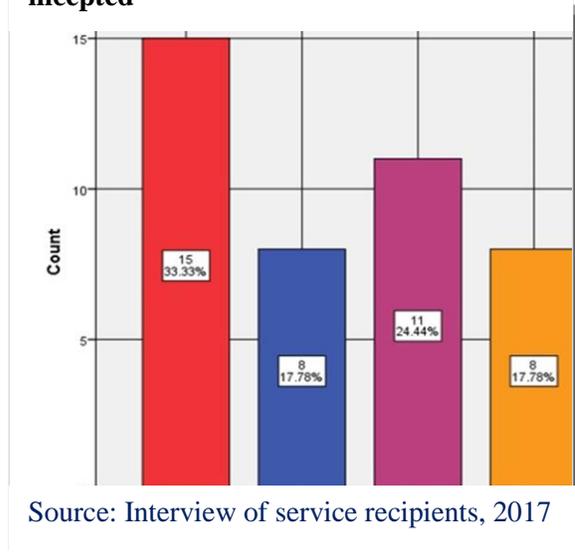


Figure 6: Service recipients’ view on increase of dutifulness and honesty compared to times when NIS was incepted

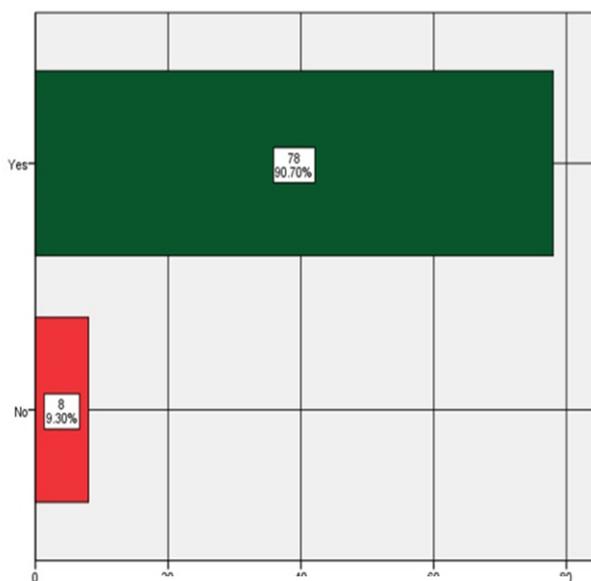


It is found that the perception of the officials and the service recipients regarding increase of dutifulness and honesty of the public employees are almost the same and it is a good signal for the nation and may be thought that NIS has some contribution to the achievement.

8.8 Respondents’ View on Having Ethics Committee and Focal Point

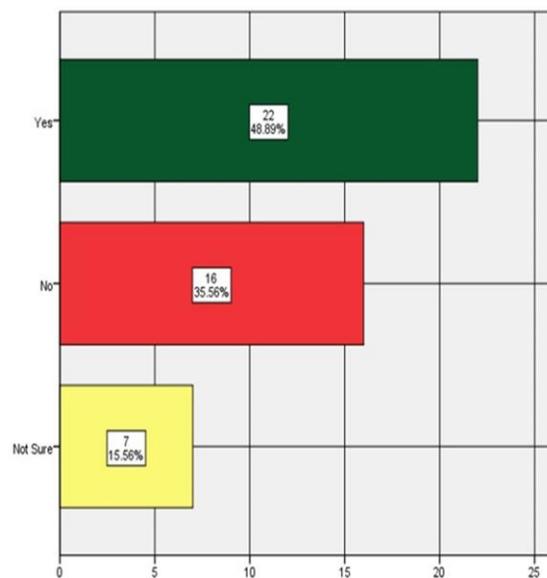
‘Ethics Committee and Focal Point’ of ministries/divisions and department are supposed to play key role in preparing and implementing NIS activities in line with their work plan mentioned in the strategy. The effectiveness of the NIS depends largely on the ‘Ethics Committee and Focal Point’ in any organization. Therefore, the officials were asked whether there is any ‘Ethics Committee and Focal Point’ or not in their organizations.

Figure 7 shows that 90.70% officials responded that they have ‘Ethics Committee and Focal Point’ in their organizations while 9.30% respondents replied that they do not have any ‘Ethics Committee and Focal Point’ in their organizations. Correspondingly, 48.89% of the service recipients replied positively and 35.56% told that they did not found or heard about having ‘Ethics Committee and Focal Point’ in the ministries/divisions and departments from where they received or receive services while 15.56% viewed that they are not sure or do not have any idea about the matter (Figure 8).



Source: Interview of Ministry and Department Level Officials, 2017

Figure 7: Officials' view on having Ethics Committee and Focal Point



Source: Interview of Service Recipients, 2017

Figure 8: Service recipients' view on having Ethics Committee and Focal Point

Bangladesh revealed that 92.72% respondents (Government officials of the rank of Joint Secretaries and Deputy Secretaries) know about the NIS Focal Points of their respective ministries/divisions (ADSL, 2014). The finding of the present study is almost similar to the baseline survey. One thing creates very optimism that half of the service recipients (48.89%) have found or heard about having 'Ethics Committee and Focal Point' in the ministries/divisions and departments.

The officials who replied positively (90.70%) as saying that they have 'Ethics Committee and Focal Point' in their ministries/divisions and departments were also asked how the 'Ethics Committee and Focal Point' help or contribute towards implementing the NIS and thus in promoting good governance. The responses have been summarized in Table 6.

Table- 6: Officials' view on contribution of 'Ethics Committee and NIS Focal Point' towards implementing the NIS*

Sl.	Officials' View	No. of Responses	Percentage
1.	Discuss irregularities and NIS issues in the quarterly meeting and monthly coordination meeting for awareness building of the employees	47	54.65

Sl.	Officials' View	No. of Responses	Percentage
2.	Organize views exchange meeting/seminar/workshop to follow NIS	28	32.56
3.	Organize training	22	25.58
4.	Advise to keep NIS in training session	6	6.98
5.	NIS work plan preparation, implementation and regular monitoring	9	10.46
6.	Ensure work done by specific time limit	2	2.33
7.	Truly reporting and make recommendations on NIS implement	3	3.48

*Note: Multiple answers have been considered

Source: Interview of Ministry and Department Level Officials, 2017

The Consultancy Service (Baseline Survey) Final Report conducted by IC Net, Japan and ADSL, Bangladesh revealed that 48.18% respondents reported that awareness raising meetings are organized in their ministries/divisions/organizations (ADSL, 2014) and the present study indicates that awareness meetings have been increased compared to the period of base line survey.

8.9 Service Recipients' View on Complain Lodge

The ministries and departments are supposed to introduce 'Grievance Redress System (GRS)' as it is one of the key areas of the NIS. Responsiveness of the public employees to service recipients' grievances or complains is a major issue for good governance. Out of 45 service recipients 13.33% replied positively that they have lodged written or verbal complain for not getting any service on time while 86.67% did not lodge any complain.

Service recipients who complained for not getting any service in time were also enquired to tell that what sort of steps did the organizations or the 'GRS Focal Points' take on their complain. In reply, 2 service recipients told that they tried to solve problem but no result, 1 said that he did not get desired result and 3 respondents (50%) said that they have taken steps instantly and redressed the grievances. It is significant to note that 50% of the grievances solved instantly by the concerned authority or by the GRS Focal Point. But conversely 50% of the complainants did not get desired result. Therefore, there is ample opportunity to improve the GRS in the ministry and department levels.

8.10 Respondents' View on Effect of NIS on building 'Happy-prosperous Golden Bengal'

In line with the set vision, the officials and the service recipients were asked whether NIS has any effect on building happy and prosperous 'Golden Bengal'. 97.67% of the officials replied that NIS has effect on building happy and prosperous 'Golden Bengal' while only 2.33%

officials replied negatively. Contrarily, 93.33% of the service recipients think positively while 6.67% think that NIS has no effect on building happy and prosperous ‘Golden Bengal’. It is found that both the officials and the service recipients have almost the same opinion regarding effects of the NIS on building happy and prosperous ‘Golden Bengal’.

The officials who think that NIS places effect on building happy and prosperous ‘Golden Bengal’ were consequently asked how the NIS put effect on building happy and prosperous ‘Golden Bengal’. Their answers have been summed up in Table 7.

Table- 7: Officials’ view on effect of the NIS on building ‘Happy-prosperous Golden Bengal’*

Sl.	Officials’ View	No. of Responses	Percentage
1.	Reducing corruption and thus establishing corruption free society through changing mindset	41	47.67
2.	Developing moral standard and ethics of the employees through motivation and increasing honesty	24	27.91
3.	Increasing dutifulness of the employees	22	25.58
4.	Making service delivery easier, at door steps and on time	21	24.42
5.	Reducing time, cost, harassment in service delivery and achieving service recipients satisfaction	19	22.09
6.	Making organizations transparent and accountable	16	18.60
7.	Best use of Government allocation and sustainable development	16	18.60
8.	Service simplification and introduce e-service/service delivery	7	8.14
9.	Increasing employee efficiency and patriotism	12	13.97

*Note: Multiple answers have been considered

Source: Interview of Ministry and Department Level Officials, 2017

9. Challenges in Implementing the NIS at Ministry and Department Level

Implementing the NIS is not a hurdle free task; rather it is a very challenging and a mammoth task. Out of 86 officials, 53.49% replied that they face challenges in implementing the NIS in their organizations while 46.51% replied negatively. On the other hand, 75.56% of the service recipients found challenges in implementing the NIS in the organizations they received/receive services and 20% found no barriers in implementing the NIS and the rest 4.44% had no comment over the issue. Subsequently, they were asked to identify the barriers they face in executing the NIS in the organizations. Responses have been summarized in Table 8.

Table- 8: Officials’ view on Challenges they face in implementing the NIS at ministry and department level*

Sl.	Challenges Faced by the Officials in implementing the NIS	No. of Responses	Percentage
1.	Long standing traditional mind set of the employees	16	18.60
2.	Lack of awareness/insufficient knowledge on NIS of the employees	11	12.79
3.	Low motivation for employees (like low salary of the staffs)	9	10.47
4.	Lack of information sharing/information gap on services, fees and time	5	5.81
5.	Lack of commitment/inspiration of senior officials	4	4.65
6.	Inbuilt corruption attitude of some employees	3	3.49
7.	Speaks about integrity but activities are full of anti-integrity	3	3.49
8.	Lack of technical knowledge/technical person and coordination	4	4.65
9.	Leadership leads very much politically rather than rules of official function and getting wrong man in the wrong place	4	4.65

*Note: Multiple answers have been considered.

Source: Interview of Ministry and Department Level Officials, 2017

The Consultancy Service (Baseline Survey) Final Report conducted by IC Net, Japan and ADSL, Bangladesh revealed that 26.36% respondents expressed opinion that traditional mind set of officers and staff is the main challenge in the implementation of NIS (ADSL, 2014). The present study have expressed that 18.60% officials have identified long standing traditional mind set of the employees as the most critical barrier they face in implementing the NIS. It indicates that the situation is improving.

Similarly, the service recipients found a wide range of challenges in executing the NIS in the service providing organizations. 44.44% of the service recipients have identified traditional mind set of the employees, 22.22% have identified lack of training both employees and public representatives, 8.89% have identified political and local intervention, 6.67% have identified indifference of the high officials and the same number have identified low salary of the staff and 4.44% in each case have identified lack of ethics, improper supervision, corruption, lack of proper monitoring of NIS activities, non-availability of information and law publicity of the NIS as major barriers.

10. Findings from the FGD

In order to gather supplementary and more information in the study 2 FGDs have been organized where officials of different ministries, their departments and service recipients have participated actively. The participants opined that many of the employees including senior officials and public representatives do not have clear idea about the NIS, therefore, it requires wide circulation

among the employees, public representatives and the general public by the Ministry of Information and the concerned Ministry through TVC, Filler, Social Media promotion etc. They also viewed that intensive training is urgent so that all employees feel encouraged and become motivated to perform duties and responsibilities with dutifulness, honesty and practicing integrity. They thought that top authority should own the NIS and need to ensure transparency and accountability of the employees. They also suggested that the matter of practicing integrity of the employees may be depicted in the ACR by the ACR initiator which may ensure better results in implementing the NIS. They opined that there should be a link amongst responsibilities, NIS, APA and ACR. The participants also opined that political commitment is crucial for better effectiveness of the NIS. As per their belief, concerted effort and integrity practice can increase the image of the country in the Corruption Perception Index and ensure good governance in the country and thus a ‘happy-prosperous Golden Bengal’.

11. Conclusion and Policy Recommendations

It is found from the study that NIS has been contributing in promoting integrity, expediting service simplification and reducing corruption at ministry and department levels covering many areas for ensuring good governance in Bangladesh. The uncovered areas need to be included that requires utmost intervention and attention of the Government at top level. Implementing the NIS is not an easy task rather it is a gigantic, intricate, and challenging task. To overcome the identified challenges and to ensure better effectiveness of the NIS in the ministries/divisions and departments in line with the findings, policy recommendations for promoting good governance in the state and non-state institutions are as follows:

- All the areas of the NIS for the Executive and Public Administration need to be covered strictly in the ministries/divisions and departments and establish strong system to monitor. High officials should watch over seriously the implementation of the NIS work plan in the Quarterly meeting and coordination meeting of the ministries/divisions and departments. Need to ensure transparency and accountability of the employees.
- More emphasize need to be given in establishing infrastructure for ICT including faster and uninterrupted internet connection and software issues with view to accelerating e-governance/online service along with simplified service. Smart Help Desk and One Stop Service Centers should be introduced in all organizations for service recipients.
- The capacity of the training institutions needs to be enhanced to create efficient employees along with imparting training on NIS. Need mobilization against corruption through training, workshop, seminar and publicity along with the high activation of the ethics committees as well as NIS Focal Points.
- Should have a slogan on NIS at every organization. Worthy incentives should be given to those who are greatly practicing integrity.

- Need to include more chapters on morality, religious education and ethical education in text books of schools and develop code of ethics or code of conduct for each profession like doctors, engineers, social workers, teachers, cadre services in line with integrity, etc. Steps ought to be taken to aware family members of the employees to practice integrity in day to day life.

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Supply Chain Management Knowledge and Practices in Pharmaceutical Industries: A Study on Eskayef Bangladesh Ltd

Md. Moniruzzaman¹

Abstract

Supply chain management spans all movement and storage of raw materials, work-in-process inventory and finished goods from point-of-origin (POO) to point-of-consumption (POC). The supply chain function includes many sub-areas such as: forecasting and planning, purchasing and procurement, logistics, operations, inventory management, transportation, warehousing, distribution, customer service etc. Supply chain management (SCM) is the oversight of materials, information and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. The pharmaceutical sector has already been declared as one of the thrust sectors by the government of Bangladesh. Bangladesh has built a strong baseline and going towards the self-sufficiency for the production of medicine. Meanwhile, some companies have started to produce vaccine, insulin, anticancer drugs, etc. Our pharmaceutical industries are successful in domestic market. Now, it's the time to grow our international market because we passing golden time getting the opportunity of patent exemption by the TRIPS until 2030. The government should really be attentive to remove all the obstacles and solve all the problems to see pharmaceutical sector as a vital player in international market. The main focus of this study is to analyze the supply chain management knowledge and practices of a renowned pharmaceutical company in Bangladesh namely Eskayef Bangladesh Limited.

Keywords: Supply Chain Management, Pharmaceutical Sector, Procurement.

1. Introduction

Supply chain management spans all movement and storage of raw materials, work-in-process inventory and finished goods from point-of-origin (POO) to point-of-consumption (POC). SCM is a conscious and deliberate control, integration, and management of the business functions. SCM contributes and affects that supply flow through the business for the purpose of improving performance, costs, flexibility etc. which bring the ultimate benefits of the end customers or consumers. The supply chain function includes many sub-areas such as: forecasting and planning, purchasing and procurement, logistics, operations, inventory management, transportation, warehousing, distribution, customer service etc. Supply chain management (SCM) is the oversight of materials, information and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. Supply chain management involves coordinating and integrating these flows both within and among companies. SCM is both a horizontal business function (i.e. managing the supply chain in a business) and a vertical

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industry sector (i.e. businesses involved in managing supply chains on behalf of their clients). The supply chain management of pharmaceutical products deserves high priority as it is related to the life and death of men and animals around the world. The present study is an attempt to analyze the supply chain management knowledge and practices of a renowned pharmaceutical company in Bangladesh namely Eskayef Bangladesh Limited.

1.1 A General View of Pharmaceutical Supply Chain

The pharmaceutical supply chain is somehow different from other supply chains of physical goods because of its urgency, importance, storage, transportation, regulation etc. The following figures help understanding the SCM in pharmaceutical sector. According to Whewell (2009), the pharmaceutical supply chain covers drug research, development, manufacture, distribution and application through a range of healthcare services and ancillary businesses that help effective functioning of these different stages. The pharmaceutical and healthcare industry is hugely complex because it involves so many markets, products, processes and intermediaries. It is also globally heavily regulated and used by everyone in life. Ricci (2006) identified the importance of pharmaceutical companies taking control of the own distribution to maximize the potential of the different channels and to protect patients from errors or defects occurred during repackaging or relabeling.

1.2 Statement of Problem

Eskayef Bangladesh Ltd is one of the largest and fastest expanding pharmaceutical companies in Bangladesh. The company, headquartered in Dhaka - the capital city of Bangladesh, is also known as SK+F and is a part of the Transcom Group. Eskayef Bangladesh Ltd was born from the old facilities of SmithKline & French in Bangladesh when the company was restructured to form GlaxoSmithKline in 2000. The pharmaceutical company is engaged in the manufacture and marketing of a wide range of therapeutic drugs, bulk pellets and animal health and nutrition products with annual sales surpassing 60 million US dollars. The company started its production of pharmaceuticals with the manufacture of generic products for the domestic market but has since moved into bulk products and the veterinary market. SK+F currently manufactures and markets 28 different animal health products in 57 different dosage forms.

With qualified, trained and skilled professionals on its staff and its unswerving standards of quality control, the company has distinguished itself as one of the most respected names in the pharmaceutical industry. Eskayef's manufacturing facility has transcended the frontiers after the accreditation of UK MHRA (United Kingdom Medicines and Healthcare products Regulatory Agency). The dedicated cephalosporin plant of Eskayef Bangladesh Limited is the top class state-of-the-art manufacturing facility in Bangladesh Pharmaceutical industry. Eskayef Bangladesh Ltd. has been showing a significant outcome in exporting medicines to many countries. Eskayef Bangladesh Ltd. has started supplying medicines in 16 countries like Germany, UAE, Nepal, Bhutan, Sri Lanka, Myanmar, Vietnam, Ghana, Iraq, Indonesia, Kenya,

Guatemala, Belize, Yemen, Macau and Somalia. The study is designed to analyze the supply chain management of the organization.

1.3 Research Questions

The following research questions have been identified to conduct a meaningful study:

- (i) What is the supply chain of Eskayef Bangladesh Ltd?
- (ii) What is the supply chain management knowledge and practices?
- (iii) What are the risks and challenges in Eskayef's supply chain?

1.4 Objectives of the Study

In view of the context and research questions, the broad objective of this study is to analyze the knowledge and practices of supply chain of Eskayef Bangladesh Ltd. The specific objectives are as follows:

- (i) to analyze the supply chain of Eskayef Bangladesh Ltd;
- (ii) to analyze the supply chain management knowledge and practices;
- (iii) to analyze the risks and challenges in Eskayef's supply chain.

1.5 Literature Review

It is widely accepted that the review of literature provides an understanding of the issues closely related to the research topic. It also helps to justify the research under study and to find out the knowledge gap in the respective field. A number of books, articles, reports, web-sites on supply chain management have been studied for this research work. It has been found that literature with specific focus on this sector in Bangladesh is not sufficient. However, a brief review of literature has been carried out. As the pharmaceutical marketplace confronts daunting challenges with various stakeholders demanding the pharmaceutical products to be affordable, strategic planning would be of the essence (Holdford, 2005; Birdwell, 1994). For the pharmaceutical industry, it assumes special significance as medical commodities would require to be delivered through the supply chain timely and within the reach and means of the consumers to meet their needs and satisfaction (Enyinda, 2009). Supply chain is a set of players, processes, information, and resources which transfers raw materials, and components to finished products or services and delivers them to the customers. It includes suppliers, intermediaries, third-party service providers and customers. It also includes all of the logistics activities, manufacturing operations and activities with and across marketing, sales, product design, finance and information technology.

A Supply Chain is that network of organizations which are involved through upstream and downstream linkages in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer or consumer (Lysons and Farrington, 2010). This definition highlights the key features of supply chain such as networks, linkages-

upstream and downstream, processes, value and ultimate customers. Supply Chain Management is defined as the network of organisations that are involved, through upstream and downstream linkages, in the different process and activities that produce value in the form of products and services delivered to the ultimate consumer (Dubey and Kumar, 2007). Supply chain management is the management of a network of retailers, distributors, transporters, storage facilities and suppliers that participate in the sale, delivery and production of a particular product (Chopra and Miendel, 2005). Handfield and Nichols (1999) defined pharmaceutical supply chain as “the integration of all activities associated with the flow of and transformation of raw materials through to the end-user, as well as associated information flows, through improved supply chain relationships to achieve a sustainable competitive advantage”.

SCM can be viewed as a set of activities to implement a management philosophy (Mentzer, J.T. et. al., 2001). They identified seven activities in this regard such as integrated behavior, mutually shared information, mutually shared risks and rewards, cooperation, the same goal and same focus on serving customers, integration of process, partners to build and maintain long-term relationship. Dubey and Kumar (2007) mentioned that effective supply chain management can impact and improve upon virtually all business processes, such as data accuracy, operational complexity reduction, supplier selection, purchasing, warehousing and distribution. The benefits of SCM are included as quicker customer response and fulfillment rates, shorter lead time, greater productivity and lower costs, reduced inventory supply throughout the chain, improved forecasting precision, fewer suppliers and shorter planning cycles. The pharmaceutical industry is a more than \$500 billion global business that requires a tight, safe, and efficient supply chain. Modern pharmaceutical products rely on ingredients and materials from across the globe (Kaye, 2010).

The line between a company’s internal operations and its external environment, in the opinion of Graves (2009), are becoming increasingly blurred. He stated that no area exemplifies this better than the supply chain where pharmaceutical manufacturers have to coordinate their own activities with those of partner organisations, healthcare providers and patients. He also noted that without a clear understanding of the context surrounding the process of delivering a drug to market, the chain can become a tangled web. Commenting on the challenges of supply chain management, Handfield and Dhinagaravel (2005) stated that, multiple events occurring on a daily basis are shaping the competitive and regulatory environment in which channel members operate their business. They pointed out that, regulators are demanding that wholesalers and manufacturers reveal pricing and are challenging the cost of pharmaceutical distribution. Market channels such as mail order, direct shipping and website pharmacies are also important competitive channels to consider. Another major driver of change, according to Handfield and Dhinagaravel (2005), is the increasing share of generics that are coming into the market, as some largest branded drugs go off patent. They observed that although the process of manufacturing and distributing branded and generic drugs is quite similar, the design of the distribution channel

might be substantially different. They also noted that many generic companies are exploring relationships with Indian and Chinese manufacturers to market their products. Given these changes, it is little wonder manufacturers, wholesalers, pharmacies, hospitals, and other participants are bewildered with the array of different competitive challenges that face them. They indicated that the unfortunate result is, poor perception has been created at different points in the supply and distribution chain; and channel participants have failed to communicate and work together to resolve the problems caused by this poor perception.

Svantesson (2009) has stated that pharmaceuticals, being high value goods, demand a safe process at all hubs in the chain, and security measurements must be harmonized and rigorously checked across the operating lanes with its sub-warehouses and on/off loading places. He further stated that the importance of utilizing as few on/off loading places and changes of transport mode is one of the challenges for a time effective and secure solution; this at a minimized cost level. According to Svantesson the market demands global solutions and customers are requesting the ability to order correct quantities and lower inventory levels. This situation brings a change to the order profile; with orders becoming smaller and production changing accordingly. This is a challenge to the distribution of pharmaceuticals and consolidation possibilities that can meet with the lead time demand to the end customer are highly valuable. Svantesson noted that a change of routine in the supply chain can have dramatic effects if not properly implemented at all levels. With clear communication, the cost of change reduces dramatically. Global harmonization enhances the possibility of maximizing effects in a supply chain.

The goals of the pharmaceutical supply chain, as indicated by Chopra and Miendel (2005), obviously emphasize regulatory compliance and safety of products, but also include leveraging information to be more responsive to the needs of consumers. They noted that, the unique nature of the supply chain for pharmaceuticals makes managing complex information for supply chain effectiveness challenging, but clearly the rewards for doing so are significant. They also indicated that, companies that excel in supply chain operations perform better in almost every financial measure of success. Supply chain excellence that improves demand-forecast accuracy leads to 5% higher profit margins, 15% less inventory, up to 17% stronger “perfect order” ratings, and 35% shorter cash-to-cash cycle times (VeriSign Inc., 2006). According to Chopra and Miendel (2005), many of these findings come from the Consumer Products (CP) Industry, where supply chain excellence means tightly aligning operations with consumer demand to become “demand driven”.

Dubey and Kumar (2007) observed that, the shift to a demand-driven focus has been taking place within the CP industry for years. While perhaps leading the way is in implementing demand-driven processes, the CP industry is not alone in this interest or intent. They noted that leading pharmaceutical manufacturers also recognize the value of adopting demand-driven supply chain

practices and are benchmarking their organizations against CP manufacturers, and finding that their industry is generally behind the pace. They also indicated that the pharmaceutical industry is hindered by silos of information and a general lack of timely and reliable data as a result of historical business models and trading practices.

Lambert *et. al.* (1998) identified eight SCM processes such as Customer Relationship Management (CRM), Customer Service Management(CSM), Demand Management, Order fulfillment, Manufacturing Flow Management, Supplier Relationship Management, Product Development and Commercialization, Returns Management. In the perception of Chopra and Miendel (2005), to robustly and reliably enhance patient safety and to become more demand driven, the pharmaceutical supply chain needs a ubiquitous technology framework that includes: Item-level data management; Standards for available data and how it will be accessed and maintained; Data sharing infrastructure to accommodate cost efficient management and retrieval of data; Reliable trust environment to determine who can access information, if information provided can be certified as authentic, and what can be done with information provided or accessed.

The Need for Standards In the opinion of Chopra and Miendel (2005), while item-level data management related to events within the enterprise may provide some incremental value, the potential for revolutionary value comes from the ability to link item-level data to events and observations outside the enterprise. In order to leverage item-level data across enterprises, standards are needed to ensure interoperability. According to Dubey and Kumar (2007), what is clear from early initiatives in item-level data sharing is that new types of data will be generated at unprecedented scale and will need to be exchanged in order to achieve measurable benefits across the supply chain. Conventional systems for business-to-business communications, as observed by Dubey and Kumar (2005), were not designed to manage this volume of data, and therefore will need to be augmented for item-level data management.

The research work carried by Privett and Gonsalvez (2014) identified the top ten challenges of global pharmaceutical supply chain such as Lack of coordination, Inventory management, Absent demand information, Human resource dependency, Order management, Shortage avoidance, Expiration, Warehouse management, Temperature control, Shipment visibility. There are many examples now in the news about counterfeit drugs circulating in black market channels and the places in which it is the biggest recurring problem is in the developing world where, in Africa and parts of Asia and Latin America, the proportion of counterfeit medicines has been estimated to be as high as 30%. Pharma companies have to manage incredibly complex supply chains and manage the operational challenges of working and interacting with huge numbers of suppliers contributing ingredients and components to drug production.

2. Methodology of the Study

Research method is a process which consists of various techniques or steps of gathering data or information, processing and presenting of collected data and analyzing data (Abedin, 2005). The method of research is a process of establishing a general proposition of gathering and weighing evidence (Hans Raj, 1987). The broad objective of this study is to evaluate the supply chain management of EK+F. The study follows cross section data analysis techniques and tools for identified different aspects of SCM of EK+F. The survey method of field investigation is utilized and standard tools are applied to achieve the objectives of this study.

2.1 Data Sources and Methods of Data Collection

The data from the primary sources have been gathered through field survey from the relevant respondents. Total number of respondents is 120. The respondents are retailers, executives, consumers and medical services officer. This method is employed to assess the stakeholders' opinions towards the process, benefits, views, knowledge, risks of the supply chain management of Eskayef Bangladesh Ltd. The suggestion for achieving an effective supply chain are also taken from the respondents. Data was collected from both staff and managers of Eskayef and Transcom Distribution Company, Retailers of Eskayef's products, and end customers through structured interviews and administration of questionnaire. The sample distribution is as follows:

Table 2.1: Distribution of Respondents

Category of Respondents	Frequency	Location	Types of Sampling
Retailers	60	Dhaka = 15 Chittagong =15 Khulna = 15 Rajshahi= 15	Purposive
Executives	30	Dhaka TDCL= 15 EK+F = 15	Purposive
Consumer	30	Dhaka	Random
N		120	

Secondary Sources

Secondary sources include published official statistics, reports, documents, laws, ordinances, books, articles, periodicals of different domestic and international agencies etc. Annual reports of

Eskayef, different reports and statistics on the pharmaceutical sector in Bangladesh has been used.

2.2 Data Analysis and Presentation

Data processing

The collected data from secondary sources have been processed in an orderly manner so that it could be used for econometric modeling. The survey data from primary sources are arranged and scrutinized carefully on the basis of the completed questionnaire. Appropriate processing steps such as editing, coding, classification and tabulation are followed carefully.

Analysis plan

The collected data are analyzed by applying statistical tools and techniques such as correlation, Factor Analysis, Percentage Form etc.

Data presentation

Some suitable data have been presented in graphs, charts, and pictogram.

Interpretation of results

Results are interpreted suitably and unambiguously.

Data processing and models testing are performed by MS-Excel, SPSS software's.

2.3 Techniques of Data Analysis

To address the research objectives, this study utilizes a mixed methods approach comprised of quantitative and qualitative techniques. Questionnaire technique of survey method is used to collect primary data. Purposive and simple random sampling method are used to select 30 respondents who are directly involved in managing operations and supply chain of Eskayef Bangladesh Limited procurement; 60 from retailers and 30 from consumers (end customers).

A semi structured and pre-tested interview schedule has been used to collect data. Necessary correction, modification and alterations will be done accordingly. Data has been collected through personal interview during December 2020-January 2021. Respondents were asked to indicate on a five-point scale ranging from 1 to 5.

The responses of the respondents that were recorded in the interview schedule has been transferred into a master sheet for entering the data in the computer. The recorded data has been put into the computer for statistical analysis. The SPSS computer programme was used for analysis of data. Various descriptive statistical measures such as number and percentage distribution, range, mean and standard deviation will be calculated. Simple tabular techniques

will be used to explain the data. Minimum, maximum, mean, standard deviation and percentage for quantitative variables and T- test and percentage for qualitative variables are used to illustrate the results. Multiple response analysis, Factor analysis are also used to reflect the research objectives.

Secondary Sources

Secondary sources include published official statistics, reports, documents, laws, ordinances, books, articles, periodicals of different domestic and international agencies etc. Annual reports of Eskayef, different reports and statistics on the pharmaceutical sector in Bangladesh has been used. The responses of the respondents that were recorded in the interview schedule has been transferred into a master sheet for entering the data in the computer. The recorded data has been put into the computer for statistical analysis. The SPSS computer programme was used for analysis of data. Various descriptive statistical measures such as number and percentage distribution, range, mean and standard deviation will be calculated. Simple tabular techniques will be used to explain the data. Minimum, maximum, mean, standard deviation and percentage for quantitative variables and T- test and percentage for qualitative variables are used to illustrate the results. Multiple response analysis, Factor analysis are also used to reflect the research objectives.

3.0 Analysis of Data of the Retailers (Pharmacy Level)

Total sample size for retailer respondents is 60 equally drawn fifteen from each four major cities in Bangladesh. The distribution of respondents from the retail sector has been shown in Table:

3.1.

Table 3.1: Distribution of Respondents (Retailers)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Dhaka	15	25.0	25.0	25.0
Chittagong	15	25.0	25.0	50.0
Khulna	15	25.0	25.0	75.0
Rajshahi	15	25.0	25.0	100.0
Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2021

The reliability statistics of the sample is shown by Cronbach's alpha which is 0.93.

Table 3.2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.903	.909	15

Source: SPSS Output of Field Survey, January 2021

The mean variance, co- variances and item-wise correlations are shown in Table 3.3:

Table 3.3: Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.664	3.267	4.150	.883	1.270	.059	15
Item Variances	.912	.541	1.690	1.149	3.123	.076	15
Inter-Item Covariance	.349	-.090	.662	.753	-7.328	.027	15
Inter-Item Correlations	.401	-.103	.806	.909	-7.846	.036	15

Source: SPSS Output of Field Survey, January 2021

The Anova with Tukey’s Test for Non-additivity has been shown in the Table-4.3 and Table 4.5. The F-statistic is significant at 5% level. The Hotelling ‘s T-Squared Test is found significant at 5% level.

Table-3.4: ANOVA with Tukey's Test for Nonadditivity

	Sum of Squares	df	Mean Square	F	Sig
Between People	341.996	59	5.797		
Within People					
Between Items	49.929(a)	14	3.566	81.49	.000
Residual	.695(b)	1	.695	1.236	.267
Non-additivity Balance	464.042	825	.562		
Total	464.738	826	.563		
Total	514.667	840	.613		
Total	856.662	899	.953		

Grand Mean = 3.66, Source: Source: SPSS Output of Field Survey, January 2021

a Kendall's coefficient of concordance $W = .058$.

b Tukey's estimate of power to which observations must be raised to achieve additivity = 1.701.

Table-3.5: Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
79.365	4.420	14	46	.000

Source: SPSS Output of Field Survey, January 2021

Table-3.6: Intra-class Correlation Coefficients

	Intraclass Correlation(a)	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.383(b)	.296	.491	10.302	59.0	826	.000
Average Measures	.903(c)	.863	.935	10.302	59.0	826	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.
 a Type C intra class correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

b The estimator is the same, whether the interaction effect is present or not.

c This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Source: SPSS Output of Field Survey, January 2021

3.2 Retailers' Knowledge about Supply Chain Management

Retail Respondents' knowledge about SCM of EK+F is shown in the following Table 4.7. It is observed that 23.3% respondents have reported that they know the SCM very well followed by moderate knowledge (21.7%), sufficient knowledge (20%), somehow knowledge (20%) and 15% respondents have poor knowledge about SCM.

Table-3.7: Respondent’s Knowledge about SCM

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid poor	9	15.0	15.0	15.0
Somehow	12	20.0	20.0	35.0
Moderate	13	21.7	21.7	56.7
Very Well	14	23.3	23.3	80.0
Sufficient	12	20.0	20.0	100.0
Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2021

3.2.1 Respondent’s View about SCM.

The results show that only 25% respondents reported that they identified SCM as Data Collection, Supplier, Purchasing, Warehousing, Stocktaking, Distribution. While 46.7% respondents viewed SCM as Supplier Selection, Purchasing, Warehousing, Stocking, Distribution, 12% viewed SCM as warehousing and distribution and only 6% considered SCM as distribution.

Table 3.8: Respondent’s View about SCM.

A. Data Collection, Supplier, Purchasing, Warehousing, Stocktaking, Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	15	25.0	100.0	100.0
Missing System	45	75.0		
Total	60	100.0		

B. Supplier Selection, Purchasing, Warehousing, Stocking, Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	28	46.7	100.0	100.0
Missing System	32	53.3		
Total	60	100.0		

C. Warehousing, Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	12	20.0	100.0	100.0
Missing System	48	80.0		
Total	60	100.0		

D. Distribution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	6	10.0	100.0	100.0
Missing System	54	90.0		
Total	60	100.0		

Source: SPSS Output of Field Survey, January 2021

3.3 Benefits of SCM

Multiple Response Analysis (MRA) is carried out to identify the benefits of SCM. Only 2.8% respondents identified no impact of SCM, 38.1% respondents reported high impact of SCM, 31% viewed medium impact. In regards to heavy impact 20.7% respondents opined that SCM has heavy impact on the supply chain. The results are shown in Table 3.9:

Table 3.9: Impacts of the Benefits of SCM (Retailers)

Benefits(a)	Responses		Percent of Cases
	N	Percent	N
No Impact	25	2.8%	41.7%
Moderate Impact	67	7.4%	111.7%
Medium Impact	279	31.0%	465.0%
High Impact	343	38.1%	571.7%
Heavy Impact	186	20.7%	310.0%
Total	900	100.0%	1500.0%

a Group

Source: SPSS Output of Field Survey, January 2021

Factor Analysis of the responses regarding the benefits of SCM reveals that shorter lead time has high mean (4.15) followed by reduced cycle time (3.97), Reduced waste (3.80), competitive

advantage (3.83), reduced cost (3.78), greater supply chain visibility (3.72), reduced inventory (3.62) etc. The results are shown in Table 4.10.

Table 3.10: Descriptive Statistics of the Indicators of SCM Benefits

Indicators	Mean	Std. Deviation	Analysis N
Superior Customer Value	3.27	1.300	60
Reduced Cost	3.78	.825	60
Cooperative Organizational Relationships	3.58	1.046	60
Effective Business Process	3.47	.929	60
Information Sharing	3.68	.965	60
Integrated Relationships	3.78	.958	60
Shorter Lead Time	4.15	.799	60
Reduced Waste	3.80	.755	60
Reduced Cycle Time	3.97	.736	60
Improve Responsiveness to Customer Requirements	3.63	1.025	60
Greater Supply Chain Visibility	3.72	.993	60
Enhanced Quality and Service	3.42	.979	60
Competitive Advantage	3.83	.905	60
Improved Supply Chain Communications	3.27	.972	60
Reduced Inventory	3.62	.993	60

Source: SPSS Output of Field Survey, January 2021

KMO and Bartlett's Test is used to measure sampling adequacy of influencing factors to examine the appropriateness of factor analysis. Here the KMO value is 0.768 reveals that the sampling adequacy of factor analysis. The Bartlett's test of Sphericity (Table 4.11) indicates that Chi-Square value i.e. 632.94 with 105 degree of freedom meaning that overall significant of the analysis.

Table 3.11: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.768
Bartlett's Test of Sphericity	Approx. Chi-Square	632.935
	df	105
	Sig.	.000

Source: SPSS Output of Field Survey, January 2021

3.4 The Communalities of the Factors

Extraction Method: Principal Component Analysis is used find the importance of the factors. Here shorter lead time (0.857), reduced cycle time (0.838), reduced waste (0.825), improved supply chain communications (0.790), integrated relationship (.0.762), information sharing (0.691) are the most important factors for the benefits of SCM. The results are shown in Table 3.12:

Table 3.12: The Communalities of the Factors

Indicators	Initial	Extraction
Superior Customer Value	1.000	.282
Reduced Cost	1.000	.724
Cooperative Organizational Relationships	1.000	.602
Effective Business Process	1.000	.713
Information Sharing	1.000	.691
Integrated Relationships	1.000	.762
Shorter Lead Time	1.000	.857
Reduced Waste	1.000	.825
Reduced Cycle Time	1.000	.838
Improve Responsiveness to Customer Requirements	1.000	.649
Greater Supply Chain Visibility	1.000	.761
Enhanced Quality and Service	1.000	.709
Competitive Advantage	1.000	.745
Improved Supply Chain Communications	1.000	.790
Reduced Inventory	1.000	.548

Extraction Method: Principal Component Analysis.

The extraction sums of squared loadings that component 1 has 45.05% variance, component 2 has 17.65% and component 3 has 7.23% variance.

Source: SPSS Output of Field Survey, January 2021

The total variance explained of the factor analysis is shown in Table 4.13. The initial eigenvalues for components 1, 2 and 3 are respectively 6.758, 2.65 and 1.09. It reveals that the component 1 has alone explained 45.07% of variance while component 2 has explained 17.66%, Component 3 has explained 7.27%. Other components are insignificant in terms of explaining total variance of the model. The rotation sums of squared loadings for component 1 is 4.82 (32.16%), 3.49 (23.28%) for component 2 and 2.18 (14.55%) for component 3.

Table 3.13: Total Variance Explained

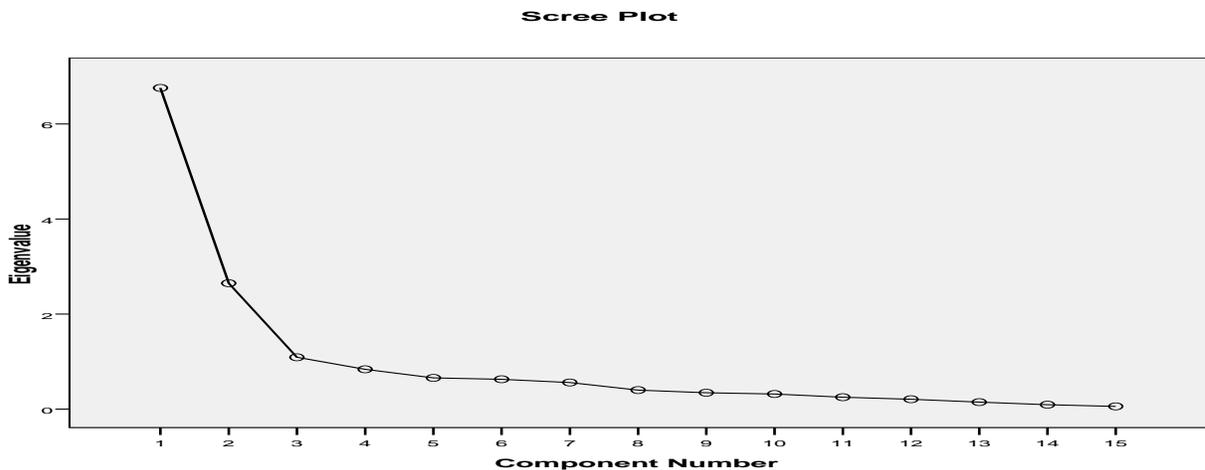
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.758	45.057	45.057	6.758	45.057	45.057	4.824	32.159	32.159
2	2.648	17.656	62.713	2.648	17.656	62.713	3.491	23.276	55.435
3	1.091	7.273	69.986	1.091	7.273	69.986	2.183	14.551	69.986
4	.838	5.587	75.573						
5	.657	4.383	79.956						
6	.628	4.185	84.141						
7	.560	3.731	87.872						
8	.401	2.672	90.545						
9	.344	2.295	92.840						
10	.318	2.121	94.962						
11	.251	1.673	96.635						
12	.207	1.383	98.017						
13	.148	.984	99.001						
14	.093	.618	99.619						
15	.057	.381	100.000						

Extraction Method: Principal Component Analysis.

Source: SPSS Output of Field Survey, January 2021

The Scree Plot for Principal Component Analysis is shown in Figure 3.1:

Figure 3.1: Scree Plot for Principal Component Analysis



3.5 Component Matrix Analysis

The weight of each factor in each component is shown in Table 3.14:

Table 3.14: Component Matrix(a)

Indicators	Component		
	1	2	3
Superior Customer Value	.492	-.148	.135
Reduced Cost	.737	-.404	.137
Cooperative Organizational Relationships	.650	-.300	.300
Effective Business Process	.738	-.398	.104
Information Sharing	.698	-.430	.139
Integrated Relationships	.733	.474	.003
Shorter Lead Time	.646	.250	-.614
Reduced Waste	.753	.492	.125
Reduced Cycle Time	.727	.383	-.404
Improve Responsiveness to Customer Requirements	.680	.430	-.031
Greater Supply Chain Visibility	.757	-.349	-.258
Enhanced Quality and Service	.772	-.282	.184
Competitive Advantage	.656	-.519	-.214
Improved Supply Chain Communications	.432	.633	.450
Reduced Inventory	.471	.546	.168

Extraction Method: Principal Component Analysis.

a 3 components extracted.

From the component matrix it is found that 12 factors have high influence on the benefits of SCM. These are enhanced quality and service (0.772), greater supply chain visibility (0.757) reduced waste (0.753), effective business process (0.737), reduced cost (0.737), reduced cycle time (0.727), information sharing (0.698), improve responsiveness to customer requirements (0.680), competitive advantage (0.656), cooperative organizational relationships (0.6.50). Components 2 and 3 are not important as most of the factors have negative coefficients.

The rotated weight of each indicator for each component is shown in Table 3.15:

Table 3.15: Rotated Component Matrix(a)

Indicators	Component		
	1	2	3
Superior Customer Value	.490	.194	.066
Reduced Cost	.832	.126	.126
Cooperative Organizational Relationships	.742	.225	-.038
Effective Business Process	.822	.118	.156
Information Sharing	.821	.087	.102
Integrated Relationships	.248	.738	.394
Shorter Lead Time	.176	.279	.865
Reduced Waste	.280	.811	.298
Reduced Cycle Time	.204	.505	.736
Improve Responsiveness to Customer Requirements	.228	.665	.394
Greater Supply Chain Visibility	.719	.022	.494
Enhanced Quality and Service	.793	.256	.120
Competitive Advantage	.761	-.142	.382
Improved Supply Chain Communications	.031	.882	-.105
Reduced Inventory	.047	.724	.147

Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 3.17 shows the component transformation. Here component 1 has more weight as compared to component 2 and component 3.

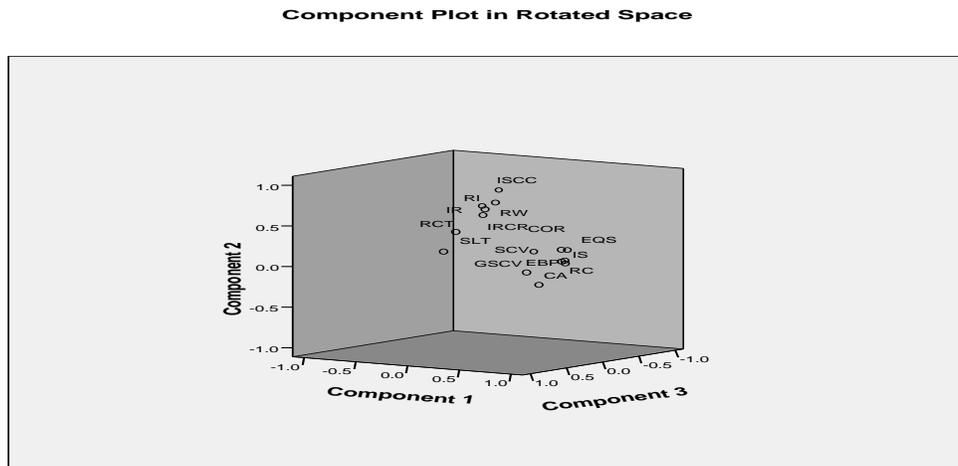
Table 3.17: Component Transformation Matrix

Component	1	2	3
1	.742	.515	.430
2	-.627	.760	.172
3	.238	.397	-.887

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Figure 3.2: Component Plot in Rotated Space



The component score coefficients are shown in Table 3.18:

Table 3.18: Component Score Coefficient Matrix

Indicators	Component		
	1	2	3
Superior Customer Value	.118	.044	-.088
Reduced Cost	.206	-.010	-.091
Cooperative Organizational Relationships	.208	.072	-.222
Effective Business Process	.198	-.020	-.063
Information Sharing	.209	-.020	-.097
Integrated Relationships	-.031	.193	.075
Shorter Lead Time	-.122	-.102	.557
Reduced Waste	-.006	.244	-.021
Reduced Cycle Time	-.099	.018	.399
Improve Responsiveness to Customer Requirements	-.034	.164	.097
Greater Supply Chain Visibility	.109	-.136	.235
Enhanced Quality and Service	.192	.045	-.119
Competitive Advantage	.148	-.177	.182
Improved Supply Chain Communications	-.004	.378	-.297
Reduced Inventory	-.041	.254	-.071

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

Eigenvalues of the three functions and Wilk's Lambda is shown in Table 4.19. Function 1 has higher eigenvalue (2.041) and 65.2% variance of function 1 is explained while the eigenvalue for function 1 is estimated at 0.719 and 23.0% variance is explained. The eigenvalue of function 3 is 0.371 and only 11.80% variance is explained.

Table 3.19: Summary of Canonical Discriminant Functions

A. Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	2.041(a)	65.2	65.2	.819
2	.719(a)	23.0	88.2	.647
3	.371(a)	11.8	100.0	.520

a First 3 canonical discriminant functions were used in the analysis.

B. Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 3	.140	97.471	45	.000
2 through 3	.425	42.411	28	.040
3	.730	15.609	13	.271

The Chi-square test of function 1 through 3 is significant at 1% level where the p-value is .000 and the same for function 2 through is also significant at 5% level.

Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Superior Customer Value	.435	.455	.060
Reduced Cost	1.067	.136	-.584
Cooperative Organizational Relationships	-.953	.084	-.206
Effective Business Process	.294	.418	.935
Information Sharing	-.649	.134	-.262
Integrated Relationships	.069	.619	.035
Shorter Lead Time	.169	-.249	-.419
Reduced Waste	-1.576	-.698	.023
Reduced Cycle Time	.076	-.548	.206

Improve Responsiveness to Customer Requirments	.216	.394	-.092
Greater Supply Chain Visibility	.107	-.590	-.023
Enhanced Quality and Service	-.365	.081	.520
Competitive Advantage	1.017	.397	-.043
Improved Supply Chain Communications	.539	.696	-.668
Reduced Inventory	-.229	.005	.733

Structure Matrix

Indicators	Function		
	1	2	3
Reduced Waste	-.416(*)	.311	.061
Enhanced Quality and Service	.048	.499(*)	.392
Improved Supply Chain Communications	-.306	.491(*)	-.202
Superior Customer Value	.063	.403(*)	.134
Reduced Cost	.125	.394(*)	.081
Information Sharing	.005	.373(*)	.124
Cooperative Organizational Relationships	-.125	.367(*)	.016
Integrated Relationships	-.224	.358(*)	-.043
Improve Responsiveness to Customer Requirements	-.176	.329(*)	.155
Competitive Advantage	.231	.233(*)	.167
Shorter Lead Time	-.005	-.073(*)	-.052
Effective Business Process	.031	.349	.491(*)
Reduced Inventory	-.241	.159	.350(*)
Greater Supply Chain Visibility	.136	.165	.314(*)
Reduced Cycle Time	-.121	-.009	.135(*)

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions

Variables ordered by absolute size of correlation within function.

* Largest absolute correlation between each variable and any discriminant function

Table: 3.17 Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Superior Customer Value	.346	.362	.048
Reduced Cost	1.349	.172	-.738
Cooperative Organizational Relationships	-.943	.083	-.204
Effective Business Process	.335	.475	1.065
Information Sharing	-.689	.143	-.278
Integrated Relationships	.077	.688	.039
Shorter Lead Time	.206	-.304	-.512
Reduced Waste	-2.428	-1.075	.035
Reduced Cycle Time	.102	-.739	.277
Improve Responsiveness to Customer Requirements	.220	.401	-.094
Greater Supply Chain Visibility	.110	-.605	-.024
Enhanced Quality and Service	-.404	.090	.577
Competitive Advantage	1.178	.460	-.050
Improved Supply Chain Communications	.635	.820	-.787
Reduced Inventory	-.245	.005	.782
(Constant)	.663	-2.611	-.162

Unstandardized coefficients

Table 3.19: Functions at Group Centroids

Location of Respondents	Function		
	1	2	3
Dhaka	.952	.762	-.758
Chittagong	-2.139	-.492	-.287
Khulna	-.254	.820	.824
Rajshahi	1.441	-1.090	.220

Unstandardized canonical discriminant functions evaluated at group means

Classification Function Coefficients

	Location of Respondents			
	Dhaka	Chittagong	Khulna	Rajshahi
Superior Customer Value	1.264	-.239	.944	.809
Reduced Cost	3.126	-1.607	.342	2.744
Cooperative Organizational Relationships	.105	2.819	.924	-.709
Effective Business Process	1.319	.189	2.627	1.643
Information Sharing	.158	1.978	.557	-.715
Integrated Relationships	-1.719	-2.802	-1.710	-2.917
Shorter Lead Time	5.005	4.507	3.928	5.168
Reduced Waste	-2.129	6.739	.792	-1.290
Reduced Cycle Time	-.292	.450	-.019	1.398
Improve Responsiveness to Customer Requirements	-.257	-1.484	-.647	-.984
Greater Supply Chain Visibility	-3.289	-2.879	-3.494	-2.137
Enhanced Quality and Service	-1.387	.020	.017	-1.188
Competitive Advantage	5.801	1.558	4.327	5.475
Improved Supply Chain Communications	5.857	2.498	3.895	3.880
Reduced Inventory	1.116	2.234	2.648	1.750
(Constant)	- 30.043	-30.312	-30.927	-25.669

Fisher's linear discriminant functions.

3.6 Regression Analysis

Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	R Square Change	F Change	df1	df2	Sig. F Change
1	.527(a)	.278	.053	1.265	.278	1.235	14	45	.285	2.055

a Predictors: (Constant), Reduced Inventory, Competitive Advantage, Shorter Lead Time, Improved Supply Chain Communications, Cooperative Organizational Relationships, Effective Business Process, Improve Responsiveness to Customer Requirements, Information Sharing, Integrated Relationships, Enhanced Quality and Service, Reduced Cycle Time, Reduced Cost, Greater Supply Chain Visibility, Reduced Waste

b Dependent Variable: Superior Customer Value.

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.680	14	1.977	1.235	.285(a)
	Residual	72.054	45	1.601		
	Total	99.733	59			

a Predictors: (Constant), Reduced Inventory, Competitive Advantage, Shorter Lead Time, Improved Supply Chain Communications, Cooperative Organizational Relationships, Effective Business Process, Improve Responsiveness to Customer Requirements, Information Sharing, Integrated Relationships, Enhanced Quality and Service, Reduced Cycle Time, Reduced Cost, Greater Supply Chain Visibility, Reduced Waste

b Dependent Variable: Superior Customer Value.

3.7 Successfulness of SCM of EK+F (Retailers)

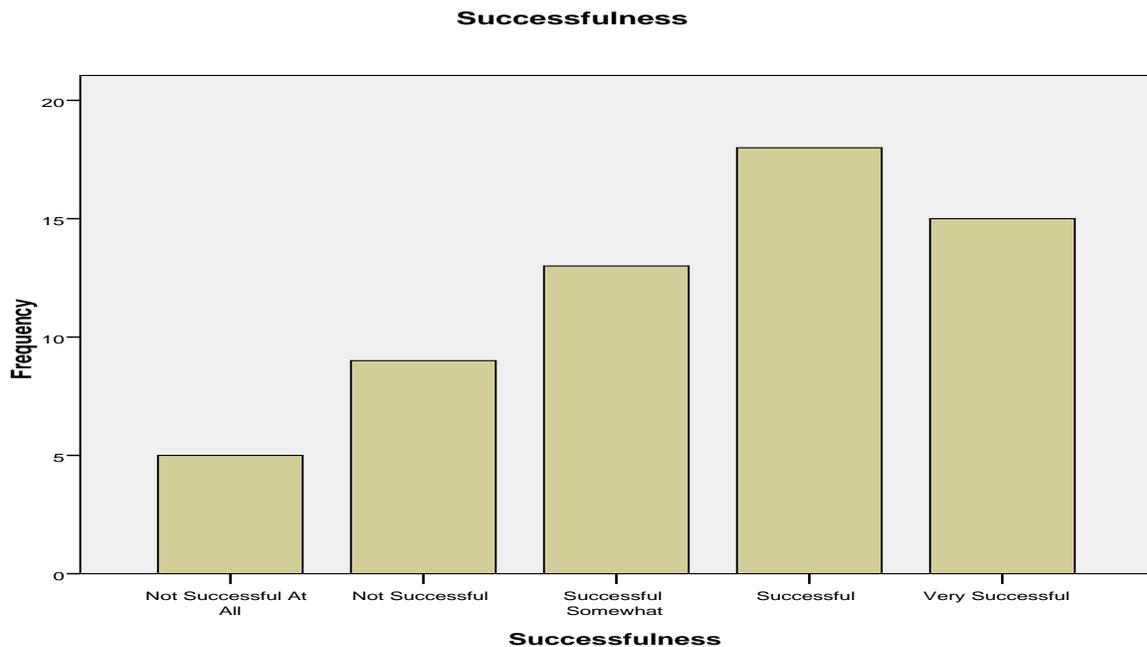
The successfulness of SCM as reported by retailers is shown in Table 4. 30.0% respondents reported that SCM of SK +F is successful, 25% as very successful, 21.7% as successful

somewhat. Only 8.3% respondent reported that SCM is not successful at all, 15% reported as not successful.

Table 3.21: Successfulness of SCM of EK+F (Retailers)

Indicators		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Successful At All	5	8.3	8.3	8.3
	Not Successful	9	15.0	15.0	23.3
	Successful Somewhat	13	21.7	21.7	45.0
	Successful	18	30.0	30.0	75.0
	Very Successful	15	25.0	25.0	100.0
	Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2021.

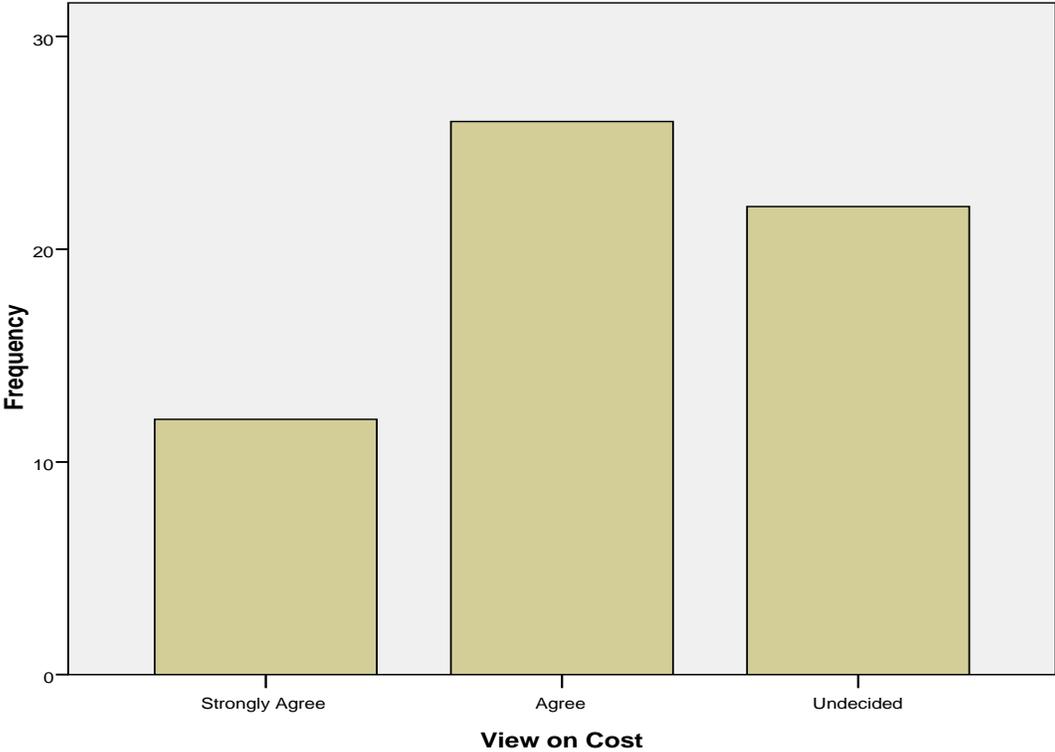


Regarding view on cost of EK+F products 43.3% retail respondents agreed that the cost is high as compared to other companies while 20.0% strongly agreed with high cost while 36.7% respondent are undecided on this issue. Table 4.22 shows the view on cost:

View on Cost (Retailers)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	20.0	20.0	20.0
	Agree	26	43.3	43.3	63.3
	Undecided	22	36.7	36.7	100.0
	Total	60	100.0	100.0	

View on Cost



4. Analysis of Responses of Executives

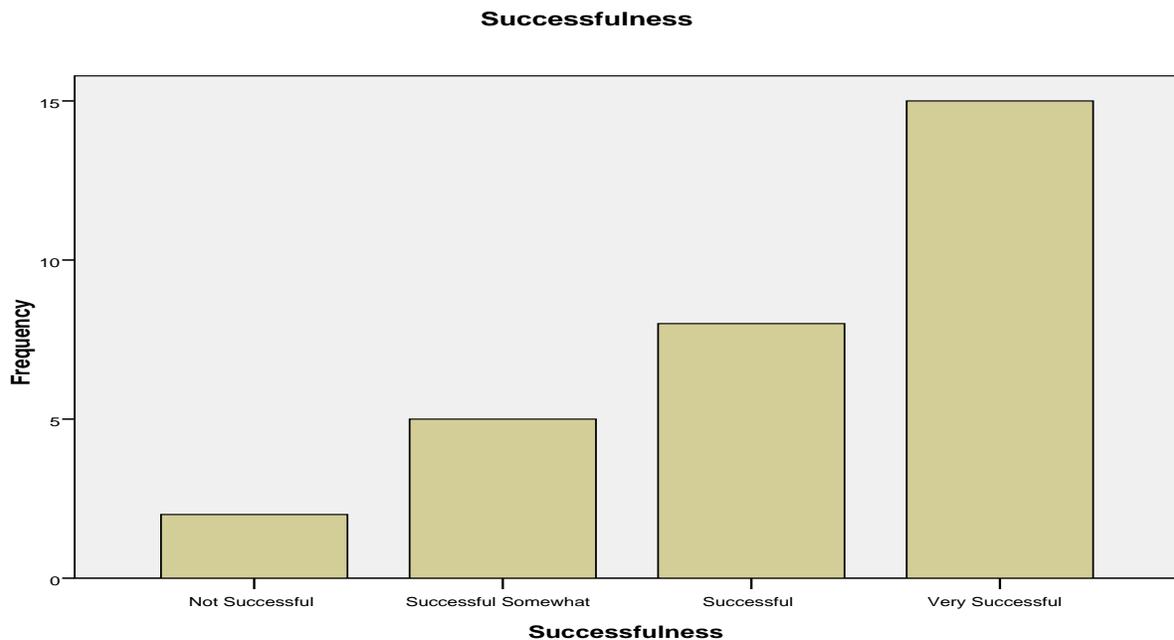
Supply chain is the management of a network of retailers, distributors, transporters, storage facilities and suppliers that participate in the sale, delivery and production of a particular product. The results from the responses of executives indicated that 50% of the respondents strongly agreed, 45% agreed and 5% were undecided as to the definition of the supply chain. This indicates that the 95% of the respondents are knowledgeable about the subject they provided answers for. One hundred percent (100%) of the respondents who were surveyed in the wholesale facilities considered data collection, supplier selection, purchasing, warehousing, stock taking, distribution as stages in supply chain management. However, the retail survey results indicated that 75% of the interviewees considered data collection, supplier selection, purchasing, warehousing, stock taking, and distribution as the stages in supply chain management

4.1 Successfulness of SCM

Regarding successfulness of SCM, 50% respondents reported it as very successful. 27.7% respondents identified SCM as successful, 16.7% reported as successful somewhat and only 6.7% as not successful.

Table 3.23: Successfulness (EK+F Executives)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Successful	2	6.7	6.7	6.7
	Successful	5	16.7	16.7	23.3
	Somewhat Successful	8	26.7	26.7	50.0
	Very Successful	15	50.0	50.0	100.0
	Total	30	100.0	100.0	



4.2 Supply Chain Challenges:

From the responses of 30 officials from EK+F and TDCL the following challenges have been identified:

- Lack of coordination
- Inventory management
- Absent demand information
- Human resource dependency
- Order management
- Shortage avoidance
- Expiration
- Warehouse management
- Temperature control
- Shipment visibility

The results of field survey reveals that 86.7% respondents has identified lack of coordination as a challenge to SCM while 80% as inventory management, 80% as order management, 33.3% as absent demand management, 50% as human resource management, 20% as shortage avoidance, 53.3% as expiration management, 66.7% as warehouse management, 63.3% as temperature control and 66.7% as shipment visibility.

Table 3.24: Frequency Distribution of Challenges

Challenges	Frequency			
	Yes	Percentage	No	Percentage
Lack of Coordination	26	86.7	4	13.3
Inventory Management	24	80	6	20
Absent Demand Information	10	33.3	20	66.7
Human Resource Dependency	15	50	15	50
Order Management	24	80	6	20
Shortage Avoidance	6	20	24	80
Expiration	16	53.3	14	46.7
Warehouse Management	20	66.7	10	33.3
Temperature Control	19	63.3	11	36.7
Shipment Visibility	20	66.7	10	33.3

Source: Field Survey, 2016

As a group 60% respondent identified supply chain management challenges as yes while 40% as no.

Table: 3.25 Challenges Frequencies (group)

		Responses		Percent of Cases
		N	Percent	N
SCMC ^a	Yes	180	60.0%	600.0%
	No	120	40.0%	400.0%
Total		300	100.0%	1000.0%

a Group

4.3 Factor Analysis

The factor analysis of the multiple responses has been done excluding three factors such as absent demand information, shortage avoidance and expiration because of low correlation coefficient. The components have been identified. The results have been shown in below mentioned tables.

Table: 3.26 Component Matrix(a)

	Component		
	1	2	3
Order Management	.671	-.159	-.180
Inventory Management	-.643	.188	-.355
Temperature Control	.476	-.456	.211
Shipment Visibility	.228	.803	-.146
Human Resource Dependency	.542	.564	.275
Lack of Coordination	-.384	.115	.843

Extraction Method: Principal Component Analysis.

a 3 components extracted.

Table: 3.27 Rotated Component Matrix(a)

	Component		
	1	2	3
Inventory Management	-.742	-.154	
Temperature Control	.668	-.173	
Order Management	.528	.143	-.457
Shipment Visibility	-.236	.802	-.136
Human Resource Dependency	.294	.770	
Lack of Coordination			.933

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

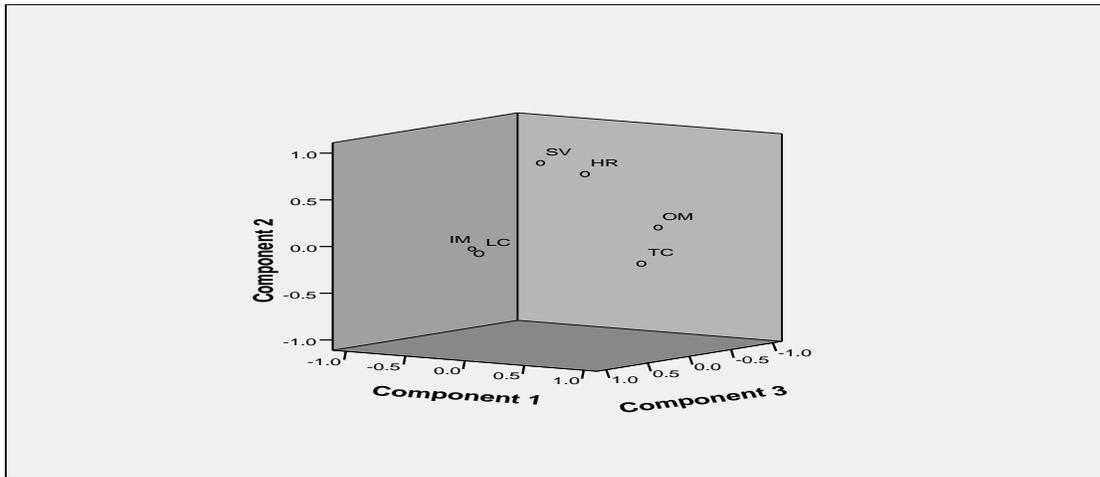
Table:3.28 Component Transformation Matrix

Component	1	2	3
1	.793	.448	-.413
2	-.444	.889	.111
3	.417	.095	.904

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Plot in Rotated Space



4.4 Recommendation for Effective and Efficient Supply Chain (Retailers)

The most important recommendation from the retail responses is provide more affordable drugs (26.7%). Customer relationship management is also found as an important recommendation (20%). The other recommendations are decentralized distribution system (16.7%), improve data and communication system (13.3%, competitive price (8.3%), provide more logistics(6.7%), strengthen management structure(5%) and open wholesale and retail branches(3.3%).

		Responses		Percent of Cases
		N	Percent	
RES(a)	Open Wholesale and Retail Branches	2	3.3%	3.4%
	Provide More Affordable Drugs	16	26.7%	27.1%
	Strengthen Management Structure	3	5.0%	5.1%
	Improve Data and Communication System	8	13.3%	13.6%
	Competitive Price	5	8.3%	8.5%
	Provide More Logistics	4	6.7%	6.8%
	Customer Relationship Management	12	20.0%	20.3%
	Decentralized Distribution System	10	16.7%	16.9%
	Total	60	100.0%	101.7%

a. Dichotomy group tabulated at value 1.

5. Recommendations and Conclusion

5.1 Recommendations

From the analysis of the results obtained from the surveys, the following recommendations have been made to enable 'Eskayef Bangladesh Limited' to achieve its main vision is to lead the national pharmaceutical market, to be recognized as a multinational conglomerate from Bangladesh and stand out as a model of efficiency & trust to our collaborators, consumers, health care professionals & society. These include:

1. 'Eskayef Bangladesh Limited' should employ more marketing staff in order to effectively distribute its products to a wider customer base.
2. 'Eskayef Bangladesh Limited' should continue to produce the high quality pharmaceuticals products but at a less production cost so the prices of its products would be cheaper to ensure that low level income earners could also patronize them since the poor in Bangladesh form a larger proportion of the population.
3. To help the distribution chain, 'Eskayef Bangladesh Limited' should occasionally organize education seminars for communities to help them know the usage of drugs and the possible adverse effects of their abuse. It is well known in Bangladesh, that not all sick people go to the hospital or ask their pharmacists for correct medication, they rather purchase medicines from drug peddlers and unapproved retailers.
4. 'Eskayef Bangladesh Limited' should improve on its data collection and communication systems. These would enhance information flow within the Company and promote the implementation of new strategies and directives. It would also help to reduce its bad debts since customers can be followed up effectively to pay whatever they purchase. Good data collection system would help it improve on its forecasting system to reduce the shortages it encounters in order to effectively meet the needs of its customers.
5. 'Eskayef Bangladesh Limited' should buy more distribution vans to improve its supply chain system.
6. Ernest Chemists Limited should have franchise offices in the remaining three (3) regions and other business districts where it does not have a regional office or branch. This would enable it improve on its distribution processes and broaden its customers base. It would also increase its volume of business and market shares.
7. The Government of Bangladesh should encourage the development of local pharmaceutical manufacturing capacity by reducing or waiving off some of the taxes on pharmaceutical raw materials also called active pharmaceutical ingredients (APIs). In addition, the government should encourage the expansion of the local pharmaceutical companies by giving tax reliefs to companies with branches or offices in most if not all regional capitals and district capitals of the country.
8. Government should discourage foreign pharmaceutical companies from considering and/or taking Bangladesh as a dumping site for the substandard or disapproved products by other national food and drugs authorities.

9. Medicine export should be emphasized to LDCs than any other countries: Some companies are aggressive to enter the highly regulated overseas markets, such as, USA, Australia, Europe, Canada, France, and Gulf countries. But the practical observation is that getting export status to those countries requires huge investment in the manufacturing plant to achieve certification from different international drug regulatory authorities, highly sophisticated documentation, and huge initial capital investment. Actually the export volume to the highly regulated countries will not be easily feasible; rather we can perform pretty well and can potentially increase our export if the exporters become more attentive to LDCs. Among 50 LDCs, only Bangladesh has its strong fundamental and modern manufacturing base, hence we can easily share the drug market of rest of the LDCs. So, considering the practical situation, the LDCs should be the targeted markets of our pharmaceuticals, of course, side by side, moderately regulated and highly regulated markets may be explored gradually. However, we can establish joint-venture, tool manufacturing, and contract- manufacturing business with the companies of developed countries, not only for exporting medicines.
10. Establishing Export cell by the govt./private Consultancy firms may promote Pharma export: Government can establish specialized Export Cell to promote exports of pharmaceuticals to grab and capitalize the huge export opportunities in LDCs. Some private Consultancy firms having experience and expertise in drug export professionally can be engaged to assist the pharmaceutical companies who do not have the technical and expertise know-how to go through the entire process of export, or have lacking in documentation skills or even do not have the skilled man power to deal with the drug export. Thus, Consultancy firms can play a significant role to explore export to maximum countries, accelerate export activities, and to reduce the overall cost of export. Even some small companies having International Marketing Department (IMD) can explore the benefits of outsourcing by hiring Export Consultants to reduce its overhead expenditure and make a comparative study of cost-benefit ration to justify having IMD.

6. Conclusions

From the study it can be concluded that ‘Eskayef Bangladesh Limited’ has an effective supply chain management strategy even though there is still room for improvement. ‘Eskayef Bangladesh Limited’ provides good quality and efficacious medicines that are affordable and available to all level of income earners in Bangladesh. ‘Eskayef Bangladesh Limited’ does this by importing both patented and generic medicines from the world’s leading pharmaceutical companies so nationals from all over the world in Bangladesh can have their trusted brands of medicines. Again, ‘Eskayef Bangladesh Limited’ produces some of the medicines locally from an ultra-modern factory plant in Tongi and distributes them through its own wholesales and other members of the pharmaceutical distribution chain to make sure accessibility of good quality and efficacious medicines at affordable prices. Moreover, the Bangladesh pharmaceutical industry has challenges and constraints. Notable among them are under development of manufacturing capacity, growing threat of counterfeit and diverted medicines from Asia, weaknesses in implementation of intellectual property rights, focus of local production on Over-the-Counter

(OTC) medicines, inability for local manufacturers to produce essential medicines that meet standards for international tenders, poor pharmaceutical coverage for the majority of Bangladeshis, high concentration of retail pharmacies in major cities and rural areas, unmet professional human resource development and high mark-ups at every stage of the supply chain which tends to increase the price of medicines. Some of the challenges facing 'Eskayef Bangladesh Limited' include lack of funds for some expansion projects such as taking charge of its own pharmaceutical distribution chain and buying more vans to improve its distribution network. Also, lack of government subsidies on taxes for privately owned companies (for instance high utility bills) and high taxes on imported raw materials increases the cost of local production. The sector needs adequate support from the government to develop the API park to make the medicine products more competitive in global markets. The establishment of central drug testing laboratory is also required to strictly maintain the high standards of medicine and a bio-equivalence testing facility to the clinical testing which is prerequisite to register our products in the regulated markets. Manufacturers also need an uninterrupted supply of power and gas to the production units and special economic zones for the pharma industry with tax benefits, Collaboration between the industry and universities is required to promote research activities particularly in developing specialized drug delivery systems.

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E-learning in Bangladesh: Challenges and Overcoming Strategies

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Abstract

The COVID-19 pandemic has significantly changed the world's educational system. Many governments have enacted regulatory measures to decrease social gatherings and increase social separation to control the infection. E-learning has quickly gained popularity as a different teaching and learning method worldwide, including in Bangladesh. The objective of the current study was to identify the outcome, challenges, and overcoming strategies of the E-learning platform from Bangladesh's perspective. The relevant publications were searched from several databases for 2020 to 2022. The search words used were e-learning, distance learning, e-teaching, the COVID-19 pandemic, coronavirus, online teaching, and Bangladesh. According to the literature, academics and students face a few learning and teaching obstacles, especially in developing countries like Bangladesh. Poor internet connectivity, lack of devices, poor interaction between teachers and students, insufficient skills of the teacher, etc., are the most common factors that hinder the success of e-learning in Bangladesh. The government should take the necessary steps to nourish the e-learning methods to improve this country's education system.

Keyword: Bangladesh, Barriers, COVID-19, E-learning, Outcome.

1. Introduction

The coronavirus disease 2019 (COVID-19) was declared a pandemic disease by the World Health Organization (WHO) on March 11, 2020 (WHO, 2020). COVID-19 has severely disrupted the education process and health care frameworks all over the world. Due to the virus's high contagiousness, it is difficult to continue studying at institutions in person, which has had a major impact on traditional education. The altered situation puts people in danger of getting fatal illnesses, which creates enormous challenges for education because teachers must effectively deliver lectures. Bangladesh also faced an entire case of 2,026,908 and 29,371 deaths till October 03, 2022 (Worldometer, n.d.).

To control the transmission of the virus, different preventive measures were taken, including travel restrictions, remote office activities, border controls, isolation of confirmed cases and close contacts, quarantining visitors from affected countries, area lockdowns, social distancing practices, use of personal protective equipment, and educational institution closures (Anwar et al., 2020; Ayouni et al., 2021). Students must also obey social distance rules and adhere to the

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requirement to stay at home. As a result, a different education system must be created that offers students the chance to learn continuously while also preventing delays brought on by the pandemic (Ross, 2020). Bangladesh enacted a general lockdown on March 26, 2020. Every educational establishment stopped conducting offline teaching and switched to e-learning overnight (Jashim, 2022). In Bangladesh, COVID-19-associated school closures impacted close to one million instructors and 37 million students (UNICEF, 2021). Because of the coronavirus outbreak, there is a widespread sense of a high death toll, which is accompanied by scepticism and fear. Due to the current scenario, many countries worldwide are tempted to close the gap and lessen the harm to children. Bangladesh also experienced a high rate of mortality and morbidities due to COVID-19 infection (Islam et al., 2021). The government's primary response involved TV-based educational campaigns. According to a survey from May 2020, almost 55% of Grade 9 stipend recipients lack access to TVs. Only 43% of children choose to watch TV educational programs, the primary source of remote learning, while schools are closed, even among those who do. There were no obvious differences between the genders of the pupils when it came to whether they watched the broadcasts the previous week (World Bank, 2021).

Several universities adopted online teaching methods using different free and paid platforms. However, Bangladesh Research and Education Network (BdREN) offers university teachers free online video meeting facilities (zoom). Using this platform, up to 300 participants can join in a meeting at a time with the facilities of whiteboards, breakout rooms, chat, screen sharing, annotation, polling, etc. (Bangladesh Research and Education Network [BdREN], n.d.). Some institutions use their private platform for online-based education. A number of articles have been published in Bangladesh regarding the e-learning status and the student's response to the new teaching methods. Many of these articles focus only on a particular institution and discuss the challenges of e-learning for that specific region. Therefore, we summarize the difficulties of e-learning and their strategic solutions in light of the published data. In this work, the current scenario of e-learning methods and challenges are discussed that will be helpful for the planning of a better education system.

1.1 E-learning

A form of education known as e-learning involves students using their personal computers, laptops, or smartphones to access the internet when away from their academic institutions (Anastasiades et al., 2010). This is helpful in some cases where face-to-face education is not feasible; there needs to be more accommodation for the participants, distant locations of the participants from the institutes, etc. This learning method is also called distance learning, online teaching, video class, etc. E-learning has a role in academics due to the internet and technological advancements. This method can be divided into asynchronous and synchronous learning. Through online platforms like conferences and chats, synchronous learning encompasses direct connections among learners and instructors, whereas asynchronous learning

involves indirect interactions (Ko & Rossen, 2017; Ogbonna et al., 2019; Tarman, 2020). A list of different e-learning methods is shown in Figure 1.

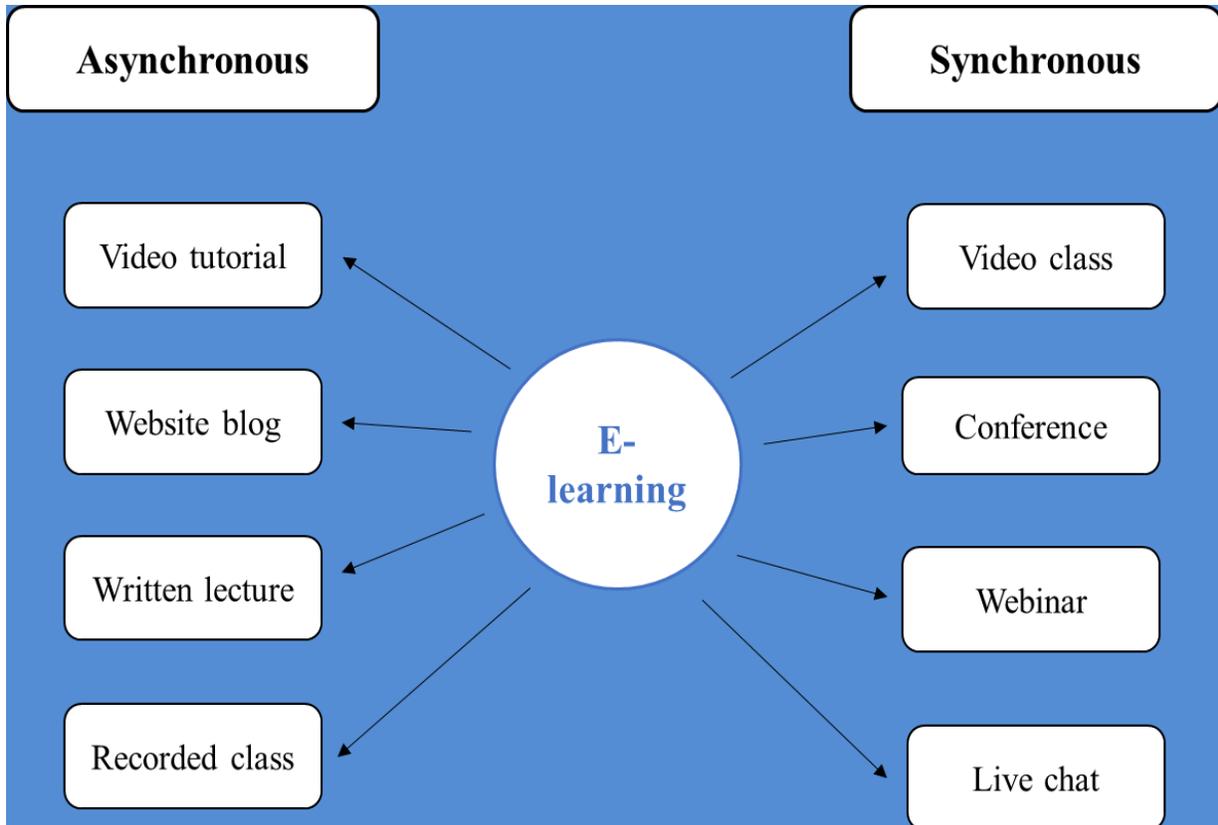


Figure 1: Mode of e-learning. Source: Fabriz et al., (2021).

However, a newer concept has emerged in the post-COVID-19 education system. This method employs offline and online education strategies (Figure 2). Many institutions divide the weeks into offline days and online days. Face-to-face education continues offline, while distance learning continues online. Online learning resources offered a conducive environment for autonomous learning. During the pandemic, the learners felt the necessity of offline classes deeply. The blended approach would improve students' information retention compared to conventional classroom instruction. Therefore, even though it necessitates appropriate capacity-building measures, the proposed approach has proven to be workable and efficient (Li et al., 2021; Sharma et al., 2022).

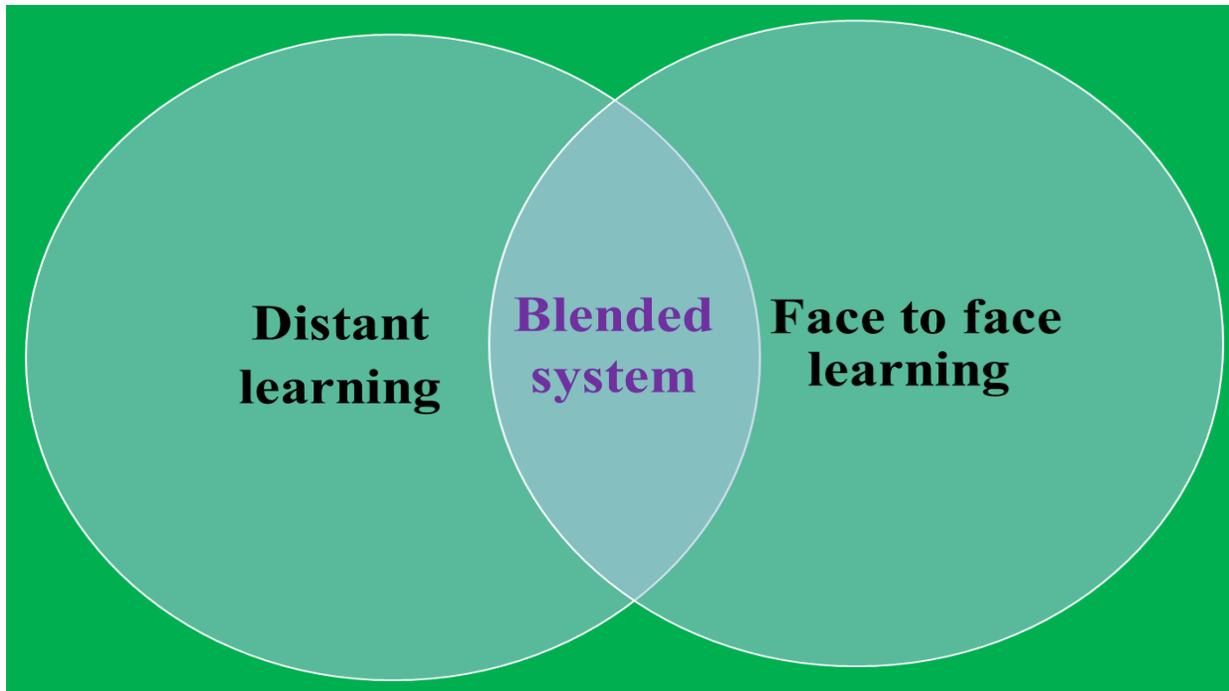


Figure 2: Blended system of learning. Source: Hubackova and Semradova, (2016).

2. Methodology

To find pertinent studies, a thorough literature search using well-known databases was carried out. The database for the journal collection included Google Scholar, ScienceDirect, Web of Science, Science Online, Scopus, SAGE Journals, and SpringerLink. With the help of a search filter, only studies released in 2020-2022 were identified. Moreover, reference lists of primary search results studies were used to find other related studies. COVID-19 pandemic, coronavirus, online education, e-learning, distance learning, e-teaching, Bangladesh, and higher education were the search phrases utilized. Inclusion and exclusion conditions were created for choosing the most pertinent papers. Studies on that tended to e-learning, online teaching, and higher education during the pandemic in Bangladesh were eligible for inclusion. From the first search, 350 articles were compiled, with Google Scholar producing the greatest amount. Only 150 items out of 350 were chosen for the final evaluation (excluding non-scientific writings such as magazine articles, trade publications, etc.). The last determination for the literature study depended on the abstract, which needed to meet the following measures: published on an accredited source (journal), acceptable methodological standard, and clearly defined research objective related to the current study. For the final review, only articles with full text were included.

3. Result and Discussion

3.1 Challenges for E-learning in Bangladesh

According to a study, the learning environment, students' psychological status, technical resources, the design and outline of the course, the amount and accessibility of the course materials, and the interaction between the teachers and students all play a role in effective and successful online learning in Bangladesh (Islam & Habib, 2021). The top three barriers to e-learning are a lack of resources, access to alternative e-learning platforms, and learning alone at home (Hoque et al., 2021). The other challenges are listed below:

3.1.1 Personal Challenges

The e-learning method is a newer concept for students and teachers (Gopal et al., 2021). For this reason, massive changes are required in the course design, evaluation techniques, interaction ways between teachers and students, etc. As all Bangladeshi teachers and students are used to the traditional face-to-face learning method, they need help shifting to the online education mode. Teachers with lower technical expertise may need help managing the classroom with devices. According to a study, there are four hurdles to (mobile) technology-enhanced learning: intrinsic, extrinsic, the absence of design thinking, and classroom management (Chen et al., 2022). None of the items on the e-learning readiness measure for Bangladeshi students got the highest mean score, indicating they were unprepared to handle e-learning (Kabir et al., 2021b). A study conducted among Bangladeshi lady nursing students during the COVID-19 pandemic discovered that less than 50% of the students preferred e-learning (Kabir et al., 2022).

3.1.2 Lack of Proper Environment

Traditional learning system provides students with a dedicated classroom and related facilities. A good learning environment should offer a comfortable and secure area for instruction. Additionally, they should present chances for students to communicate with one another and access materials that support various learning styles. However, the e-learning concept only ensures a proper learning environment for some students. The environment is totally dependent on the student's family status and the affordability of the family. Most of the family lacks dedicated room for an educator. According to a study, most students think they learn less than they would in a typical classroom since they are not similarly challenged in an online course (Sarkar et al., 2021). This may be due to the Lack of a proper learning environment in the home. As the students lack a dedicated study room in the family, the sudden entrance of family members and pets is causing disruptions (Adedoyin & Soykan, 2023).

3.1.3 Economic Difficulty

As a developing country, most of Bangladesh's people live below the poverty line. Many students lacked proper devices or internet facilities due to financial scarcity (Rahaman et al., 2021). To accelerate the e-learning process, the University Grant Commission (UGC) initiated soft loans for public university students to buy smartphones (Alamgir, 2020). Additionally, many parents have gone their jobs, as have students who rely on part-time work to cover their tuition expenses. The students also fall into psychological distress that hampers the proper learning environment. COVID-19 has put individuals in undeveloped and underdeveloped countries in danger, with some suicide instances even being documented during the COVID-19 period in Bangladesh due to people losing their employment and dealing with the financial crisis (Bhuiyan et al., 2021; Islam et al., 2021).

3.1.4 Poor Internet Connectivity

The internet connectivity in Bangladesh could be more robust over the country. People living in the rural area are facing the poor connectivity problem most of the time. According to the Bangladesh Bureau of Statistics 2019 Multiple-Indicator Cluster Survey, 62% of Bangladeshi households lacked access to the internet at home. While being a national average, there is a significant variation in internet access based on the families' socioeconomic status. In Bangladesh, only 8.7% of households in the bottom 20% have access to the internet at home, compared to 75.3% of those in the top 20% of income (UNICEF, 2020).

3.1.5 Lack of Devices

55.89% of Bangladeshis own mobile devices, and around 31.5% of the population have internet connections. Because of this, it would be simple to counter that most individuals need easy access to online schooling. These data, however, only partially depict the situation. Although technology advancements are flourishing, computer literacy rates still need improvement. E-learning will only be able to reach some residents if such inequalities in society are present. Therefore, we must see e-learning as a complement to orthodox teaching rather than a alternate. Several programs, including Digital Bangladesh, can potentially raise the population's computer literacy rate (Ahmed & Hossain, 2014). Living outside of the Dhaka division, in rural areas, and as a woman was discovered to be connected aspects in the absence of technical accessibility and usability, which further increases perceived e-learning stress (Hasan et al., 2021).

3.1.6 Increased Mental Stress

Online classes and assignments increase the psychological pressure on students. Students' increased anxiety, laziness, and indifference in online classes serve as psychological barriers to e-learning (Islam & Habib, 2021). A study also discovered that the students' negative feelings during online lessons harm their mental health. In addition to these issues, students in online classrooms experience low motivation toward study and negative feelings (Wilczewski et al.,

2021). During distance learning, more than 80% of Bangladeshi undergraduate students experience moderate to higher levels of perceived e-learning stress (Hoque et al., 2021; Kabir et al., 2021a). Due to the universities' extended closure, students are more likely to experience anxiety related to session jams and poor e-learning, which increases mental stress (Hossain et al., 2022).

3.1.7 Improper Education Strategy

The context of distance learning is entirely different from the traditional face-to-face education system. The students, however, think that online learning needs to be simplified for them to comprehend. Additionally, it was determined that an absence of teacher-student engagement in distant learning and adequate academic support materials caused the disturbance. The educational material and instructional strategies employed in online courses significantly impact students' motivation to enroll in them (Chowdhury et al., 2022). The strategy used for offline education will not provide a successful learning outcome in distance learning. The way the course material is designed, the accessibility of academic properties, and the collaboration between teacher and students during COVID-19 all have an impact on how effective online learning will be (Wut & Xu, 2021). Additionally, students complain that they are easily side-tracked in online classrooms and that the workload has grown. As there is no limitation for physical classrooms, more online classes are conducted by the teachers. It can be challenging to turn in assignments and take part in exams in online programs. Many students need to become more familiar with online learning platforms and processes, even though multiple studies in the past have demonstrated that a lack of technical proficiency is a roadblock to e-learning (Abuhammad, 2020; Al-Senaidi et al., 2009).

3.1.8 Poor Interaction with Teachers

The shortfall of face-to-face communication relates to large numbers of the disadvantages of e-learning that have proactively been recognized. Absence of pressure is disturbing on the grounds that it makes students bound to abandon their scholastics. The failure to connect with the educator keeps students from giving input, makes social detachment, and may cause them to feel less under tension. Despite the fact that many individuals detest being continually goaded by instructors, it makes all the difference for expanding students' maintenance. Up close and personal correspondence should be supplanted with one more sort of correspondence while utilizing e-learning. For instance, video chats, message boards, and chat rooms could assist in addressing the drawbacks related to a lack of face-to-face interaction during online learning (Ali et al., 2018).

3.1.9 E-learning is Only Available in Several Subject Areas

Not all study fields can be utilized really in e-learning, and not all instructive disciplines are made equivalent. E-learning is at present more fit to sociology and humanities than scientific sectors like engineering and medical science, which require a specific measure of involved

practical experience. For this reason, the courses cannot be completed by distance learning. In the instance of nursing students, research revealed that blended learning courses dramatically raised the satisfaction scores of the participating students while achieving comparable post-test results to traditional course formats (Aljawarneh, 2019). Due to the experimental nature of the subject, switching to distance learning in chemistry education can be more difficult than in other subjects (Babinčáková & Bernard, 2020).

3.1.10 Online Students Lack the Development of Communication Skills

Due to the inherent nature of distance learning, the students have minimum interaction with their classmates and teachers. As a result, the students need to improve their communication skills up to the mark though their academic understanding is well. Teachers viewed E-learning favorably during the pandemic because it was time-efficient and made it simple to share resources. However, it needed to be adequate for monitoring or doing practical sessions, and it was less successful in evaluation (Saha et al., 2021).

3.2 Improvement of E-learning Process

This study compiled data from the current literature to better understand e-learning and teaching during the lockdown, and related obstacles and prospects. The earlier studies (Demuyakor, 2020; Ratten, 2020; Tesar, 2020) widely investigated the effect of the pandemic on the entire education sector. The works detail the transition from face-to-face instruction to e-learning due to the COVID-19 lockout. Comparing offline and online learning was only briefly studied (Dawadi et al., 2020; Marinoni et al., 2020; Wargadinata et al., 2020; Zhang et al., 2020). These studies show that both students and teachers prefer face-to-face teaching method. The reasons given in the present work for teachers' and students' fondness for offline education over online education include several issues with online learning.

As a new method, e-learning has some drawbacks, which can be removed by providing proper facilities and training. The university grant commission (UGC) should regularly arrange proper training about e-learning strategies for teachers. Additionally, administrators from educational institutions should annually submit a budget for creating hybrid classrooms. The teachers' efficiency must be assessed from the student's side to improve the quality of education. The internet connectivity must be strong enough for uninterrupted online activities.

Moreover, the proper device should be available for the students. The students must be satisfied with their education and the valuable information they obtain through online classes to use virtual learning services (Chowdhury et al., 2022). Some changes must be made to enhance the quality of e-learning, including developing support programs for underachievers, and building relationships with other students and teachers online. Organizing the necessary tools, initiatives, and financial and technical support is crucial to improve online learning. The government and

the community will be forced to create new rules, regulations, platforms, and solutions due to this COVID-19 lesson for upcoming situations. After the COVID-19 outbreak has ended, this lesson will encourage using free resources to move traditional school classes to online education. This will be a part of future teaching and learning. Because of this, investing in the implementation of e-learning is still essential because the return on investment may determine how well students are trained.

4. Conclusion and Recommendation

The traditional educational system, which many claim was already outdated, has been upended by the COVID-19 pandemic. Due to the complete lockdown during this pandemic, distant learning is replacing the face-to-face learning system. Because it removes the geographic barriers that are helpful for social distancing, online education is the finest option in this pressing time. However, effective distance learning depends on some elements, including access to technology, knowledge of fundamental computer skills, a pedagogical framework for online learning, and flexibility in learning. In order to create a new paradigm for learning experiences, following and incorporating online education is essential. While it may have initially looked that this revolutionary movement in the educational sector would take some time, online education programs can play a crucial part in the growth and dissemination of education during this period of standard shift. Modern learning tools can open new learning opportunities for students. The COVID-19 pandemic and subsequent closing of educational institutions have accelerated it. Finally, education must incorporate online learning to adapt to this rapidly changing world.

5. Limitations:

Our study has some limitations. Firstly, this study only includes seven online databases as our journal collection. Secondly, the journals were limited to only open access and published data, as other formats were excluded from our search. Finally, the Bangladeshi perspective and limited time frame narrowed down the total number of journals for including our analysis.

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Articles

Critically Anatomization of Participants' Complacency using Online Learning Platforms in Bangladesh during the COVID-19 Pandemic

Ullas Chowdhury, Tahmidur Rahman and Prabir Chandra Debnath

Perceptions on the Effectiveness of National Integrity Strategy in Promoting Good Governance: A Study on Ministry and Department Levels in Bangladesh

Md. Jahidul Islam, Md. Zakirul Islam and Mohammad Ehsanul Kabir

Supply Chain Management Knowledge and Practices in Pharmaceutical Industries: A Study on Eskayef Bangladesh Ltd

Md. Moniruzzaman

E-learning in Bangladesh: Challenges and Overcoming Strategies

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