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The Impact of Perceived Organizational Support Factors on Public Service Innovation Outcomes: Evidence from Bangladesh

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Abstract
This quantitative research study aims to assess the influence of the factors of perceived organizational support on public service innovation outcomes in Bangladesh, where public organizations are finding it increasingly difficult to provide adequate services on the back of growing demands amid a rising population. The support factors considered in this study include team cohesion, rewards and recognition, technological support and replication scope. Data was collected through a structured survey questionnaire distributed to innovation team members at the district and 'upazila' administrative levels. 372 questionnaires were validated. The concept of 'Innovation Teams' emerged in 2010, when the Bangladesh government issued a circular to form 'Work Improvement Teams' in all ministries, divisions, departments, and field administration, which were later turned into innovation team. A series of test, including the Kaier-Meyer-Oklin Test and the Bartlett's Test for Homogeneity of Variance, were conducted for content homogeneity, acceptability, and reliability. Results from the multiple regression analysis showed that each of the factors of perceived organizational support had a positive impact of on public service innovation outcomes. Recommendations to policy formulators for building a solid strategy and expanding perceived organizational support to boost public service innovation outcomes were made.

Keywords: Perceived Organizational Support, Team Cohesion, Rewards and Recognition, Technological Support, Replication Scope, Public Service Innovation Outcomes.

1. Introduction

For public organizations in Bangladesh, providing adequate services against a background of growing demands from a rising population and a low number of public service providers has been a real challenge. Indeed, by all accounts, public organizations in Bangladesh do not often function according to citizen's expectations. People are very much dissatisfied with the current manual, time-consuming, and expensive public service delivery system. The inefficiency of the dispatch section (Siddiqui, 2006), problems using modern technologies (e.g. computer, laptop, tablet, smart phones, internet,), the lack of technology, the lack of resources, the lack of proper training, and corruption are cited as the main obstacles to ensuring smooth, timely, and harassment-free services from the public organizations of Bangladesh (Hassan, 2015). The low service recipient/service provider ratio also contributes to the difficulties providing proper services to the mass of people.

The International Monetary Fund (IMF) and the World Bank (WB), among a string of international organizations, have been sounding the alarm for years. Donor agencies are also urging reforms to ensure quick, easy, smooth, time-saving public services to citizens throughout the country. Admittedly, the government of Bangladesh has a huge burden on its hands trying to fulfill the pressing demands of the public. While there has been a few initiatives, such as the adoption of the Right to Information Act and a Charter of Duties, in response to the public outcry to overcome the challenges faced by the public administration, a novel approach needs to be introduced, one that promotes the innovative and creative abilities of public organizations (Hassan, 2015). This is the best time to show and reinvent governmental organizations to deal with changing demands and show accountability to citizens (Nusair, Ababneh, & Bae, 2012). For effective pro-people and customer-oriented public services, innovation appears to be one of the best alternatives. Specifically, what is needed is team level innovation through perceived organizational support. This will enable civil servants to use new tools for applying the New Public Management (NPM) concept (Hassan, 2015).

The concept of 'innovation teams' first emerged in 2010, when the Bangladesh government issued a circular to form Work Improvement Teams (WIT) in all ministries, divisions, departments, and field administration. WITs were later turned into innovation teams (Gazette, 2013). The rational was that innovative abilities and creative attitudes were vital factors that could help public organizations meet the challenges they were facing (Andriopoulos, 2006). They are seen as great motivated of team members (Shumshunnahar, 2021). An essential feature for innovation in an organization is the attitude towards the team and the individuals that form it. Innovation teams require organizational support, which is perceived to influence public service innovation outcomes.

This study focuses on the impact of perceived organizational support factors on public service innovation outcomes in Bangladesh, which include team cohesion, rewards and recognition, technological support, and replication scope on public service innovation outcomes. It seeks to address the following research question: What is the influence of team cohesion, rewards and recognition, technological support, and replication scope on public service innovation outcomes? There are very few studies on influential perceived organizational support factors and on the relationship between these factors and public service innovation outcomes in the context of Bangladesh. This study intends to bridge the gap and contribute civil service improvements in Bangladesh as well as in other developing countries.

2. Literature Review

- Public Service Innovation Outcomes

Public service innovation (PSI) is a long-term commitment that will result in observable changes and improvements in performance and results in the public sector (McGann, Blomkamp, & Lew, 2018). PSI's goal is to organize and provide services to citizens at a reasonable cost and promptly, with the government using public funds wisely and prudently (Hage, 1999; Gupta, 2018). The core principles of introducing innovation in public services are increasing customer engagement and satisfaction through digital web portals, ensuring the best possible customer access (reducing visitors), delivering services at a low cost/value for money (reducing costs), and improving online for better use of technology and modern equipment for providing faster services (Shumshunnahar, 2021). Government offices are to implement new approaches, such as a "one-stop" approach, which will make services more accessible and minimize the number of visitors to offices (Mustika, Rahardjo, & Prasetya, 2019). An effective performance routinely requires adherence to predetermined qualitative features of the service (Hoegl & Gemuenden, 2001). A team's efficiency is determined by

sticking to the planned innovation project aim from start to finish (Hülsheger, Anderson, & Salgado, 2009).

- Measuring Public Service Innovation Outcomes

Three indicators have been acknowledged to measure the efficiency of public service innovation outcomes: Reduced Time, Reduced Costs and Reduced Visits, (South-South Galaxy, 2019). Encapsulated under the TCV acronym (time, costs, and visits), these indicators were introduced under the 'Access to Information' initiative (A2I) as an evaluation system from the perspective of service recipients. Carried out to comprehend the changes brought about by the move to online services, TCV studies are aiding government offices to improve their efficiency and develop more user-friendly e-services and online services. They essentially focus on innovations meant to alleviate difficulty in accessing certain services. By 2019, 102 TCV studies on streamlined, digitalized, and doorstep innovation services had been completed under A2I. Improvements are reported to have saved roughly 66% of the time necessary, 66% of the total cost involved, and 38% of the trips required (South-South Galaxy, 2019).

- Perceived Organizational Support

The evaluation of employees' performance level is referred to as perceived organizational support (POS) and emphasizes organizational ethics and performance in terms of their well-being (Eisenberger, Huntington, & Hutchinson, 1986). It focuses on the interactions between employees and employers (Eisenberger et al.,1986). The perception of organizational support is fundamentally a give-and-take connection between the firm and the job, emphasizing quality relationships. POS is generally defined as the level at which an organization values its employees' contributions and cares about their well-being and its people have faith in it (Kurtessis et al., 2017). The core elements of POS applied to this study are (i) team cohesion, (ii) rewards and recognition, (iii) technological support, and (iv) replication scope. They will be discussed next.

- Team Cohesion

Team cohesion refers to the extent to which team members are able to share useful information, engage in frequent discussions, and learn from one another (Gelbard & Carmeli, 2009). . Cooper and Mullen (1994) identified three factors of cohesion: team members' interpersonal attractiveness, dedication to the team task, and group pride/team spirit. The quality of team cohesion indicates how committed team members are to staying on the team (Beal et al., 2003). Team cohesion is critical for POS, where information flows, constructive debates, new learning processes, and the production of innovative knowledge are all present (Gelbard & Carmeli, 2009). Moreover, team cohesion allows team members to handle several points of view, undertake in-depth investigations, and address various issues from various perspectives (Hope et al., 2011). Team cohesion also helps to distribute authority among members (Elbanna, 2006). Hoegl and Gemuenden (2001) found that a team's ability to complete a task is determined by how well and effectively team members collaborate and interact.

Without team cohesion creativity and innovation can hardly be achieved (Hoegl & Gemuenden, 2001). There is a strong link between team cohesion and innovation outcomes. Team's togetherness allows them to deal with the ambiguity and numerous issues that come with working under harsh condition. The efficacy and success of both the team and the organization are dependent on team cohesion (Salas et al., 2015). Team cohesion motivates team members to maintain a shared relationship, stay together, and develop a desire to collaborate (Casey-Campbell & Martens, 2009). On the other end of the spectrum, the prevalence of disbelief, hatred, disrespect, or other issues may lead an individual to believe that there is no unified emotion inside the team, which reduces employee motivation and

participation in teamwork and negatively impacts the organization's innovative outcomes (Salas et al., 2015).

H_1: *Team cohesion is positively associated with public service innovation outcomes.*

- Rewards and Recognition

As tangible incentives, rewards and recognition are effective in increasing performance (Board, 2007). Employees' dedication is motivated by 'rewards and recognition' (Danish & Usman, 2010). Rewards can be used in financial or non-financial forms (Bowen, 2000). Organizations with a structured recognition and incentive system have a competitive advantage as an effective incentive and recognition system increases staff productivity, resulting in improved organizational outcomes (Deeprose, 1994). A company that has a a structured employee performance recognition and performance-based reward system and focuses on its implementation, is more likely to have a working atmosphere conducive to innovation (Freedman, 1978; Gallus & Frey, 2017). A perfect, effective, and current system of rewards and recognition can help members of the innovation team to be more creative and innovative. Incentives, rewards, and recognition can dramatically influence employee creativity (Moser & Nicholas, 2013). The following hypothesis can therefore be formed:

H_2*: Rewards and recognition are positively associated with public service innovation outcomes*

- Technological Support

Computers, laptops, smart phones, printers, internet wi-fi, software, and other technological support are among the services that an organization typically provides to its employees in order for them to work efficiently. Indeed, technology has become a requirement for achieving organizational success. Mobile or electronic banking systems can also be used to pay for applications and other certificate processing expenses. Modern businesses are aware of the importance of providing technological assistance to their staff and understand that to get optimum benefits, employees' technological skills must be updated and reinforced on a regular basis. Technology support ensures that firms perform better than those that serve customers manually (Martin-Rojas, Garcia-Morales, & Garcia-Sanchez, 2011). Every firm today requires technology assistance to handle common difficulties (Carayannisa, Popescub, & Sippc, 2006). To reach organizational goals, technology should have management support (Fernandes, 2006). Of course, government offices require technology assistance as well in order to streamline service delivery processes (Štemberger, Manfreda, & Kovačič, 2001). The one-stop service delivery concept is quite popular nowadays, and electronic methods have been used for these services. Based on the above, the folllowing hypothesis can be formed:

H_3: *Technological support is positively associated with public service innovation outcomes*

- Replication Scope

When the decision is made to embrace an innovation with a minor alteration or adaptation, the modification process is critical. The philosophical logic behind replication is to turn a small success into big ones. The goal of reproducing a successful formula, adopting, or repeating an application is to make rapid progress in a short period of time (Winter and Szulanski (2001) gave the example of a bank that successfully used the same successful application across all its branches. Replication is sometimes more successful than true innovation because it applies the original formula and then refines while minimizing the effort as it replicates it (Winter & Szulanski, 2001). Once a successful service delivery approach has been established, the same procedure might be reproduced to stimulate outcomes on a national, international, and intra-organizational level. As a result, replication implies both mistreatment and effectiveness (March, 1991). Not only may other companies' projects be duplicated and replicated, but so

can the same organization's own innovation. To replicate an innovation, interested enterprises or organizations must first establish a process that defines the application of knowledge, service categories, consultation and regulation procedure, as well as the demand and supply of the reproduced innovation (Winter & Szulanski, 2001).

H4: *Replication scope is positively associated with public service innovation outcomes*

On the basis of the above literature review, the following conceptual framework was formed:

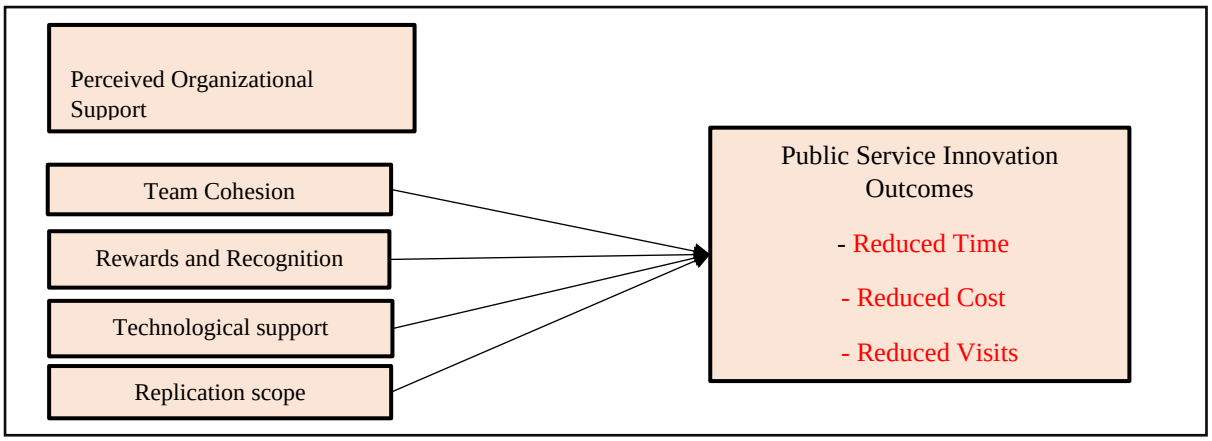

Figure 1: Conceptual Framework (Developed by authors for this study)

3. Methodology

- Population Size and Sample Frame

The population for this quantitative research consisted of administrative innovation teams at the field level, i.e., at the district and 'upazila' (sub-district) levels. The concept of 'innovation teams' emerged in 2010, when the Bangladesh government issued a circular to form Work Improvement Teams (WIT) in all ministries, divisions, departments, and field administration, which were later turned into innovation teams (Gazette, 2013). Each innovation team is composed of a chief innovation officer and five members who are civil servants of the People's Republic of Bangladesh. The basic responsibility of each innovation team member is to work toward bringing quality changes, i.e., develop an internal working system, in particular a service delivering system. Different scholars will have a different opinion about the sample size drawn from a reliable population (Cooper & Schindler, 2003). Researchers can reduce the sampled number without negotiating the level of accurateness if the drawn sample size is greater than 5% of the total population. The total population for this study consisted of 64 innovation teams at the district level and 492 at the upazila level. Accordingly, the target sample was 28 (5% of 556). When using a multiple regression analysis in a multivariate study, the sample size can be 10 times bigger than the number of variables studied. Thus, since the number of variables in this study was 19, the minimum sample size should be 190 (19*10).

- Data Collection and Validity

A two-part questionnaire was used in this study. The first part covers the respondents' demographics (gender, age, educational level, total service length, length of membership of innovation team). Part two consists of specific close-ended questions on the factors influencing perceived organizational support and public service innovation outcomes. A six-point even numbered Likert scaling (ranging from 1 to 6 where, 1 stands for 'strongly disagree' and 6 for 'strongly agree') questionnaire was used to collect data through postal, electronic mail and

direct communication. The Likert scale is the most commonly employed scale among the various scales in survey research (Cook, 1980). Using an odd number scale increases the odd to pick a midpoint as an answer, which provides a neutral option for respondents. To rate the extent to which this study investigated what it claimed to investigate, i.e., the extent to which this investigation led to an accurate observation of reality, confirmatory and exploratory factor analyses were conducted. Thus, before sending the survey, a pretesting of 50 questionnaires was conducted for content analysis with a response rate of 96 percent. An Exploratory Factor Analysis (EFA) for acceptability was conducted to ensure reliability. A Cronbach's alpha coefficient (the coefficient of reliability or consistency) of 0.7 or higher indicates acceptable internal consistency (the value measures how closely related a set of items are as a group). The Cronbach's alpha value in this study was 0.851 and therefore deemed acceptable.

To measure face and content validity at the development stage, the Item-Objective Congruence (IOC) index developed by Rovinelli and Hambleton (1977) was used. Items were rated by four content experts from Thailand and Bangladesh. 500 questionnaires were then distributed. A total of 372 respondents responded, with a response rate of 74.4 percent, which was determined as adequate for this study. Bartlett's Test for Homogeneity of Variance was used to test if there were an homogeneity of variances across the samples. The critical value of chi square is 9.488. If the Bartlett test statistic is greater than this critical value, there is a significant difference in the variances. If the Bartlett test statistic is less than this critical value, there is not a significance difference. In this study, since the chi square value was lower, there was no significant difference in the variances.

Finally, a test of adequacy sampling, known as the Kaier-Meyer-Oklin (KMO) Test was also conducted. The test measures how suited the data in this study is for factor analysis and returns values between 0 and 1. The rule of thumb is that values above 0.6 indicate that the sampling is adequate. Therefore, since the KMO index in this study is greater than 0.6, the sampling is suited for factor analysis. To analyze the data and test the hypotheses, a multiple regression analysis was conducted.

4. Results

As indicated in Table 2 above and as we just saw, the Cronbach's Alpha was more than 0.7 (0.851) for perceived organizational support, and the correlation item total more than 0.3 for team cohesion, rewards and recognition, technological support, and replication scope (0.736, 0.722, 0.749, and 0.806 respectively). Thus, each factor of perceived organizational support has good reliability.

Table 2: Reliability and Validity of Constructs

Variable	**Component**	**Number of Items**	**Reliability Test**		**Factor Loading**
			Cronbach's Alpha		
Perceived Organizational Support	Team Cohesion	5	0.736	0.851	0.672
	Rewards & Recognition	3	0.722		0.734
	Technological Support	4	0.749		0.745
	Replication Scope	5	0.806		0.521
Public service Innovation Outcomes	Relevance	3	0.698	0.888	0.540
	Effectiveness	3	0.713		0.925
	Reduced Time	3	0.746		0.738
	Reduced Costs	3	0.706		0.825
	Reduced Visits	3	0.726		0.779

As can be seen in Table 3, the percentage of female responders (14.8%) reflects the low proportion of female officers in Bangladesh's field administrative innovation teams. The generally low level of female civil officials in Bangladesh primarily accounts for this low percentage. The average age of innovation team members is 38 years old. A small percentage of innovation team members (.8%) holds a bachelor's degree, which is insignificant as most of them hold a higher degree (a Master or above). The average duration of service is nine years. On average, members of the innovation teams had at least 19 months of experience.

Table 3: Descriptive Statistics

Gender		**Age**	**Educational Level**			**Total Service Length**	**Length of Membership of the Innovation Team**
Male	Female	Average	Bachelor	Master	Above Master	Average	Average
317	55	37.36 years	3	268	101	9.02 years	19.23 months
85.2%	14.8%		.8%	72%	27.2%		

- *Regression Analysis*

As Table 4 shows, the regression analysis was found statistically significant (F= 112.379 at the level of p<0.000). The Adjusted R Square was .475 and R Square was .479 from which the factors explain 47.5 percent of the total variance of public service innovation outcomes, a figure deemed good enough for social science research. The Durbin Watson statistic was 1.939 for the model, which confirmed that there was no auto correlation.

Table 4: Model Summary

Model Summary						
Model 1	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**	
	.692[a]	.479	.475	.35311	1.939	
Anova						
Model 1		Sum of Squares	df	Mean Square	F	Sig.
	Regression	42.037	3	14.012	112.379	.000b
	Residual	45.635	366	.125		
	Total	87.672	369			

a. Predictors: (Constant) POS
b. Dependent Variable: PSIO

Collinearity statistics in Table 5 indicate that the VIF value was 1.737 (which is less than 10) and the tolerance value .576 (which is greater than 0.10), which confirms that there was no multi collinearity. Besides, no heteroscedasticity was found in the scatter plot of the regression standardized residual and standardized predicted values. Perceived organizational support has a significant positive influence on public service innovation outcomes. The four perceived support factors (team cohesion, rewards and recognition, technological support, and replication scope) (β=.125, t=2.511, p<.000) were shown to be strong predictors of public service innovation outcomes.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.030	.222		4.638	.000		
	POS	.119	.047	.125	2.511	.000	.576	1.737

a. Dependent Variable: PSIO

- *Hypothesis Testing*

Table 6 shows that Team Cohesion (TC) was found to be a strong predictor of public service innovation outcomes (β=.074, t=1.788, p<.000). This was also the case with Rewards and Recognition (RR) (β=.038, t=1.136, p<.000) and Technological Support (TS) (β=.038, t=1.308, p<.000). As to Replication Scope (RS), it was found to be the strongest predictor among the four indicators of POS of public service innovation outcome (β=.407, t=10.537, p<.000).

Table 6: Coefficients and Collinearity Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.686	.195		13.794	.000		
	TC	.074	.042	.092	1.788	.000	.684	1.462
	RR	.038	.033	.056	1.136	.000	.741	1.350
	TS	.038	.029	.064	1.308	.000	.761	1.314
	RS	.407	.038	.551	10.573	.000	.672	1.489

a. Dependent Variable: PSIO

- *Correlation Matrix*

Whether there is positive, negative, or no association between two variables can be denoted by the correlation matrix. The range for this matrix is -1 to +1 which means absolute negative or positive relations. Close to 1 denotes a stronger association and close to 0 a weaker association in the correlation coefficient. As Table 7 indicates, there are correlations between all the concepts.

Table-7: Correlation Matrix

Correlations						
		TC	**RR**	**TS**	**RS**	**PSIO**
TC	Pearson Correlation	1	.405**	.424**	.505**	.360**
RR	Pearson Correlation		1	.392**	.442**	.304**
TS	Pearson Correlation			1	.380**	.200**
RS	Pearson Correlation				1	.597**
PSIO1	Pearson Correlation					1

**. Correlation is significant at the 0.01 level (2-tailed)

5. Discussion, Conclusion, and Policy Recommendations

This study aimed to assess the influence of the four elements of perceived organizational support (team cohesion, rewards and recognition, technological support, and replication scope) on public service innovation outcomes in Bangladesh, where public organizations are finding it increasingly difficult to provide adequate services in the face of the growing demands of the rising population. Data was collected from innovation team members at district and 'upazila' administrative levels. It was found that all the support elements had a significant positive effect on public service innovation outcomes.

Firstly, the extent and strength of team bonding inside and between members are outcome determinative. The stronger team cohesion, the higher the outcomes. Since an optimistic attitude and accommodating gestures foster team bonding and, as a result, innovation outputs, government offices and policymakers should focus on a progressively transformational leadership and management style cultivating a brotherly and friendly environment. A non-judgmental, non-punishing, and trust-generating environment will enable innovation team members to freely brainstorm in full confidence and creatively.

Secondly, rewards and recognition are potent predictors of public-sector innovation outcomes. They serve as a motivator and a source of satisfaction for innovation team members and improve public service innovation outcomes. In Bangladesh, there is no official or direct financial or non-financial rewards and recognition structure for members of innovation teams. Besides, public employees are overwhelmed with daily tasks and innovation team members' lack of financial advantages may demotivate them. Yet, the Bangladesh government has made innovation a high priority and created two significant awards; the 'Public Administration Award' and the 'Digital Bangladesh Award.' Both reward successful innovative efforts.

Thirdly, technological support also has a significant positive impact on the outcomes of public service innovation. Authorities in Bangladesh have been providing technological support to innovation team members, including computers, laptops, and uninterrupted internet, without which any improvement would virtually be impossible. That said, it is important to note that while this is the case in urban centers, government offices in remote areas still struggle to get basic technological support, including required faster internet speed, smartphones, and printers, the lack of which make innovation and a smooth delivery of public services almost impossible. Authorities should deal with these situations as innovative digital public services not only save time and reduce costs but also are the only way to offer the public a one-stop service delivery process.

Finally, out of the four elements of perceived organizational support, replication scope has the highest positive impact on the outcomes of public service innovation. For developing countries like Bangladesh, innovation can be costly and time-consuming. Replicating successful innovation projects and initiatives is therefore seen as a viable option for patronizing public service innovation outcomes. The banking industry provides a coherent illustration of a service delivery sector replicating successful innovation. However, before replicating innovation projects, groundwork is required, and a proper guideline for replicating national or worldwide innovation projects should be established to ensure that the originality of the service delivering innovation works is preserved. The specific socioeconomic and geographical factors of a location are also critical for replicating the breakthrough as innovation that works in one place may not be working in another. In other words, the issue of its transportability is critical as it may require some key changes so as to fit with the local culture. Therefore, the designated ministries should be involved in determining whether or not the idea is replicable and transportable. If the innovation is related to the ministries of education, health, or agriculture, the choice will be made by the relevant ministry.

- *Policy Recommendations*

Based on all the above, the following recommendations can be made:

- Policymakers should design a replication plan that stimulates novel ideas and showcases and scales up innovations and their institutionalization in a way that does not stifle the original innovation process.
- There should be a strategy for allocating budgets for up-to-date technology for public offices and innovation team members, which will expedite the innovative works and public service innovation outcomes as well.
- Policymakers should create a formal structure of rewards and recognition for innovation team members, such as a specific innovation incentive policy, financial benefits, fair pay, and linking innovation performances with placement and promotion. These will work as stimulant and motivation.
- The government should introduce one-stop service centers at the district and sub-district levels.
- A customer/service seeker feedback procedure should be set up to find out the gap between expected and perceived services. This will help to improve the specific service delivering process.
- Finally, a capacity building strategy for civil servants should be formulated with an emphasis on team building, leadership development, empathy building, innovation techniques, and service simplification.

- *Implications*

This study contributes to the literature on public service innovation outcomes and the issue of perceived organizational support in a developing country as it seeks to measure public service innovation outcomes through assessing team-based performance. While the Bangladesh government had been financing public sector innovation for the last twelve years, the outcome of that investment has not been fully measured. This study will help policy formulators to build a more coherent and encompassing public service innovation strategy. As evidence that perceived organizational support influences and positively impacts innovation outcomes, this study will encourage innovation policies and provide an incentive for the government to take the measures which will encourage organizational support in favor of innovation.

- *Limitations and Future Research*

Due to a lack of time and resources, this study did not cover the operational, regulatory, and financial areas of the innovation teams, which also strongly bear on the evaluation of public service innovation outcomes. Since the model explained about 50 percent of the variances, there may thus be unexplained factors not covered by this study. In order to draw a more comprehensive picture of public service innovation outcomes in Bangladesh further studies can be done combining central and local administrations. Moreover, in giving priority to service recipients/seekers and further evaluating the quality of services, another model can be established, including a comparative analysis of before and after application of innovation. Such a model may account for the 50 percent unexplained variance as more variables would be added in the study.

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