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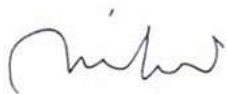
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Editorial

It is with great pleasure we are introducing the first issue of the East West Journal of Business and Social Studies (EWJBSS). At East West University, we pride scholarship and strongly support research and publications. EWJBSS is published with the aim of promoting these objectives. We are happy that scholars from around the region responded to our call to publish their works in this journal and hope that the future will attract submissions in larger numbers and from wider circles around the world. This is expected to foster increased scholarly deliberations and hope that this issue will set a benchmark for the authors intending to submit their works in the future.

We sincerely acknowledge the contributions of the researchers, English editor, and all others who have extended their sincere help and support in publishing this issue of the Journal.



Nazrul Islam

Editor

Cell Phone Customer Experience: An Appraisal for GrameenPhone (GP) in Bangladesh

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ABSTRACT

Research on customer experience is at an embryonic stage. This research embarks on a journey of exploring an appraisal of customer experience in the context of GrameenPhone (GP), one of the largest cell phone companies in Bangladesh. The study includes five categories of services that the company is keen to deliver to its customers in order to raise customer experience and loyalty. The result of the investigation suggests that the overall level of customer experience is at a modest stage, which highlights the fact that the company has a long way to go in order to achieve a super level of customer experience. In the end, the paper focuses on its limitations and managerial implications and future research.

Keywords: customer experience, cell phone company of GP, services to deliver, cell phone customers

Introduction

The term 'customer experience' is receiving increasing attention in both the academic and managerial literature (Frow & Payne, 2007). At the end of the 1990s most global businesses accord the appraisal of customer experience a high priority (see Pine & Gilmore, 1998). This is a result of numerous factors, not the least of which has been some rather noteworthy business turnarounds based on tactical initiatives to comprehend customers' needs and then provide goods or services (Hart, 2007) and the apposite follow-up servicing to maximize customers' satisfaction (Frei, 2008). In describing what differentiates success in

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businesses, hopeful individuals and experts philosophically ascribe the basis in explaining the nature of a good fortune and that is, 'how you treat people'. Only satisfied customers testify that an organization is quality oriented and their experience extends to both their lifetime value and their willingness to recommend a business to others (Homburg, Wieseke, & Hoyer, 2009).

The cell-phone idea is of 60 years old (Farley, 2007), but it took several decades to make it possible and several more to make it commonplace (Ashraf, Joarder, & Al-Masum, 2009). Now, after 10 years of successful operations, Grameenphone (GP), a unique joint venture between Telenor AS of Norway (62%) and Grameen Telecom Corporation (38%), is the largest mobile phone service provider in Bangladesh, with 11 million mobile subscribers (Waverman & Meschi, 2005). The company has been a pioneer in introducing new products and services to the market. It has also extended connectivity to those who had little or no access to communication technology and little cash to spend on services. Today, GP provides services to rural and urban customers across Bangladesh. Mobile telephone is acknowledged as a significant driver of socio-economic development, both for individuals and the nation. In addition to GP, five more multinational cell-phone companies have been competing in providing services to about 50 million potential customers by 2009 (Waverman & Meschi, 2005). Evidently, this huge market competition puts every company on hot seat of intense pressure of focusing keen attention on customer satisfaction appraisal, the importance of which can be traced back to Homburg et al., (2009), where it says that a company should work on developing strong emotional bonds with its customers and measure its progress through customer surveys. This study has been done on similar intent of understanding the concept of customer experience and identifying the factors lumped with different customized services that affect customer experience in the context of GP in Bangladesh. The findings of this study will, therefore, be most useful for GP and other cell phone company managements in order to look at the present status of customer preferences and of customer experience, as well as to identify the key variables responsible for affecting that status.

This paper is structured as follows: first, we briefly review the literature relating to the concept of the customer experience; secondly,

we discuss the concept of the customer experience; thirdly, we examine, case study of a leading organization to assessing customer experience in mobile phone-consumer context; finally, we discuss managerial implications, limitations and future research.

Customer Experience

An experience is not an amorphous construct; it is as real an offering as any service, goods, or commodity (Pine & Gilmore, 1999). In today's service economy, many companies simply wrap experiences around their traditional offerings to sell them better. To realize the full benefits of staging experiences, however, businesses must deliberately design engaging experiences. An experience occurs when a company intentionally utilizes services as the stage to engage individual customers in a way that creates a memorable event. Commodities are fungible, goods tangible, services intangible, and experiences *memorable* (Pine & Gilmore, 1998).

There is no generally accepted definition of customer experience. According to Pine and Gilmore (1999), customer experience is the sum of all experiences a customer has with a supplier of goods or services over the duration of their relationship. It could also be stated as customers' perception that a supplier has met or exceeded their expectations (Hill, 2002). This perception is the state of customers' mind, which may or may not conform to the reality of the situation. Customers may be wrong about the quality of the goods and services, but it is on these perceptions that millions of purchase decisions are made every day. So the customer experience is perceived by the customers in two basic ways: as either an outcome or as a process (Hill & Alexander, 2006). The outcome definitions characterize satisfaction as the end-state resulting from the consumption experience. Alternatively, satisfaction has been considered as a process, emphasizing the perceptual, evaluative and psychological processes that contribute to experience which transformed from commodities to goods, to services, to experiences (Pine & Gilmore, 1998). As the world's major economies have matured, they have become dominated by service-focused businesses (Frei, 2008).

Discussions to date, suggest that it is appropriate to consider the role of normal, day-to-day experience and practices as well as emotional

experiences in terms of seeking the status of customer experience. Wolf (2007) defines the outstanding or perfect customer experience as one that 'results in customers becoming advocates for the company, creating referral, retention and profitable growth'. This definition represents a helpful starting point for addressing the concept of customer experience along with its outstanding performance as advocacy typically implies achieving a high score on customer satisfaction. A number of studies have emphasized the importance of seeking high levels of customer satisfaction and resulting advocacy. For example, a study by Jones and Sasser (1995) reached two conclusions. First, only extremely delighted customers (e.g. a 5 on the 5-point scale) can be considered truly loyal. Secondly, customers who are just satisfied (e.g. a 4 on the 5-point scale) are only slightly more loyal than customers who are thoroughly dissatisfied (e.g. a 1 on a 5-point scale). Such measures, despite some limitations, can help companies make a judgment as to how far they have progressed in terms of delivering an outstanding or perfect customer experience. Of course, customer satisfaction, at any given point in time, reflects the summation of a customer's previous and present experiences with the product. As Grönroos (1997) points out, customer perceived value is created and delivered over time as the relationship with the customer develops.

Issues regarding customer experience often highlight the sale or after-sale service condition; however, the customer experience needs to be discussed in terms of the whole interaction over the lifecycle of the customer relationship, not just for the sales and service activities. The stages of a customer relationship can be considered under the three broad headings of acquisition, consolidation and enhancement. Each of these elements is divided into further entities under these three headings and each entity is mapped using tools such as process mapping or service blueprinting (Shostack, 1984; Shostack, 1987; Pine & Gilmore, 1998; Hurst, 2003).

A superior or outstanding customer experience must be achieved at an affordable cost. The concept of a segmented service strategy is important here. (Payne & Frow, 1999). Improvements in customer experience should be based on the profit potential of different customer segments and service strategies, and investment decisions should be made with the knowledge of this profit potential.

Customer Experience: A Brief Literature Review

The customer experience phenomena could be considered to be a new 21st-century breakthrough concept in terms of books such as *Customer Experience Management: a Revolutionary Approach to Connecting with Your Customers* (Schmitt, 2003). Over the last ten years, a plethora of other management books covering the topic of customer experience and its management have also been published (e.g. Pine & Gilmore, 1999; Arussy, 2002; Smith & Wheeler, 2002; Shaw & Ivens 2002).

Most of the popular management literature suggest that customer experience and its management is a new idea, pioneering consumer researchers such as Holbrook and Hirschmann (1982) have been examining experiential consumption for over two and a half decades. Although recent academic work accentuates Holbrook and Hirschmann's work as the opening point in considering experiential marketing, it has origins in much earlier academic work. Holbrook (2006) points out earlier researchers such as Abbott (1955) and Alderson (1957), whose work have emphasized how the services provide consumption experiences and their importance. Furthermore, work by Lebergott (1993) traces the concept of the consumption experience back to the writings of Adam Smith, Alfred Marshall and John Maynard Keynes. While detailed reviews of this literature already exist (see Holbrook, 2006), such discussions are not prolonged here anymore.

Frow and Payne (2007) discuss about the outstanding customer experience which are related to service quality and customer satisfaction. Their paper specifically examines the concept of customer experience and considers how an 'outstanding' or 'perfect' customer experience might be achieved at an affordable cost. Case studies from two leading companies are used to illustrate their approaches to creating the 'perfect' customer experience. Managerial insights from the case studies are also discussed.

Modern research in service-dominant logic (Vargo & Lusch, 2004) stresses the importance of co-creation where the customer is always a co-creator of value and where the brand becomes the experience (Prahalad, 2004). Co-creation has an important role to play in seeking to develop an outstanding or perfect customer experience. Whenever a co-creation

approach is adopted, the customer engages in a dialogue and interact with suppliers during product design, production, delivery and subsequent consumption and customer experience.

In considering customer experience, it is apposite to consider two aspects of consumer behavior—the traditional information-processing or decision-oriented approach and the experiential perspective. The information-processing perspective, sometimes referred to as the cognition, is well documented in the consumer behavior literature. This cognitive view points out that the customer is engaged primarily in goal-directed activities such as searching for information, evaluating available options and deciding whether or not to buy a particular product or service. Here in this phenomenon, there has been ample scope to come out of the confusion when consumers experience confusion (Leek & Chansawatkit, 2006). The experiential issue is highlighted by researchers such as Holbrook and Hirschmann (1982) and Hirschmann and Holbrook (1982). Experiential consumption research focuses emotions and contextual, symbolic and non-utilitarian issues of consumption (see Arnould & Thompson, 2005) where value resides in the consumption experience but not merely in the stroke of consumption alone.

The information-processing consumer research stream finds consumers as involved in a cognitive process on the basis of whether past, present or imagined future experiences are valuable for them (Oliver, 1999). With this procedure, the consumer is considered to be willing and be sufficiently knowledgeable to accomplish an appraisal of the benefits and thus get involved in purchasing a product or entering a relationship. The experiential purview of consumption has, nevertheless, widened this perspective substantially. Consumption includes the flow of fantasies, feelings and fun where such behavior may not necessarily be goal-oriented (Payne, Storbacka, & Frow, 2008).

Thus, customer experience ought to be taken into consideration from both an information-processing approach that focuses on memory-based activities and on processes that are more sub-conscious and private in nature (Holbrook and Hirschman, 1982). This involves viewing customer experience from a perspective of both normal day-to-day reutilized actions (Korkman, 2006; Edvardsson, 2005) as well as more emotional experiences (Smith, 2003; Pine & Gilmour, 1999).

It can, however, be argued that companies focusing on customer experience management should judge attentively which of these two viewpoints to underline. A rational point of view might be the predominant weight in a business-to-business context, while an emotional experiential outlook may be highlighted in a business to consumer context such as the leisure industry. Assumed an appropriate combination of these outlooks will be pertinent to many organizations. Company's endeavor to craft a super or perfect customer experience will necessitate considering the creation of customer's experiences from both rational and emotional viewpoints.

Empirical evidence suggests that companies are not inducing superior customer experiences. For instance, Meyer and Schwager (2007) quote research from a survey of the consumers of 362 companies by Bain and Company. Only about 8 % of them described their experience as superior; yet, 80 % of the companies surveyed consider that the experience they have been providing was actually superior. This shows a huge gap in perceptions between companies and their customers. Companies would benefit greatly from learning how other organizations have successfully crafted outstanding or perfect customer experiences, as viewed by customers. Meyer and Schwager (2007) conclusively point out that business organizations should deconstruct customers' overall experiences and resulting customer satisfaction into its component experiences.

In the case of T-Mobile USA, Power (2007) finds that an increasing percentage of *customers* report their *service* problems which are resolved in a timely manner. The semi-annual study asks *customers* about their *experiences* with *customer* care on three fronts: *phone* calls with *service* representatives or automated response systems; visits to a retail wireless store; and online. The survey examined input from more than 10,500 wireless *customers* who had *customer-care* interactions within the past year.

While customer experience is a new phenomenon in the periphery of experience economy, many studies trace the concept of the consumption experience back to the writings of the classical economists. However, having surpassed the periphery of service economy, the modern world is now experiencing new orientation with the customers on to a super level. Co-creations of values and cognitive approach focus on emotions and

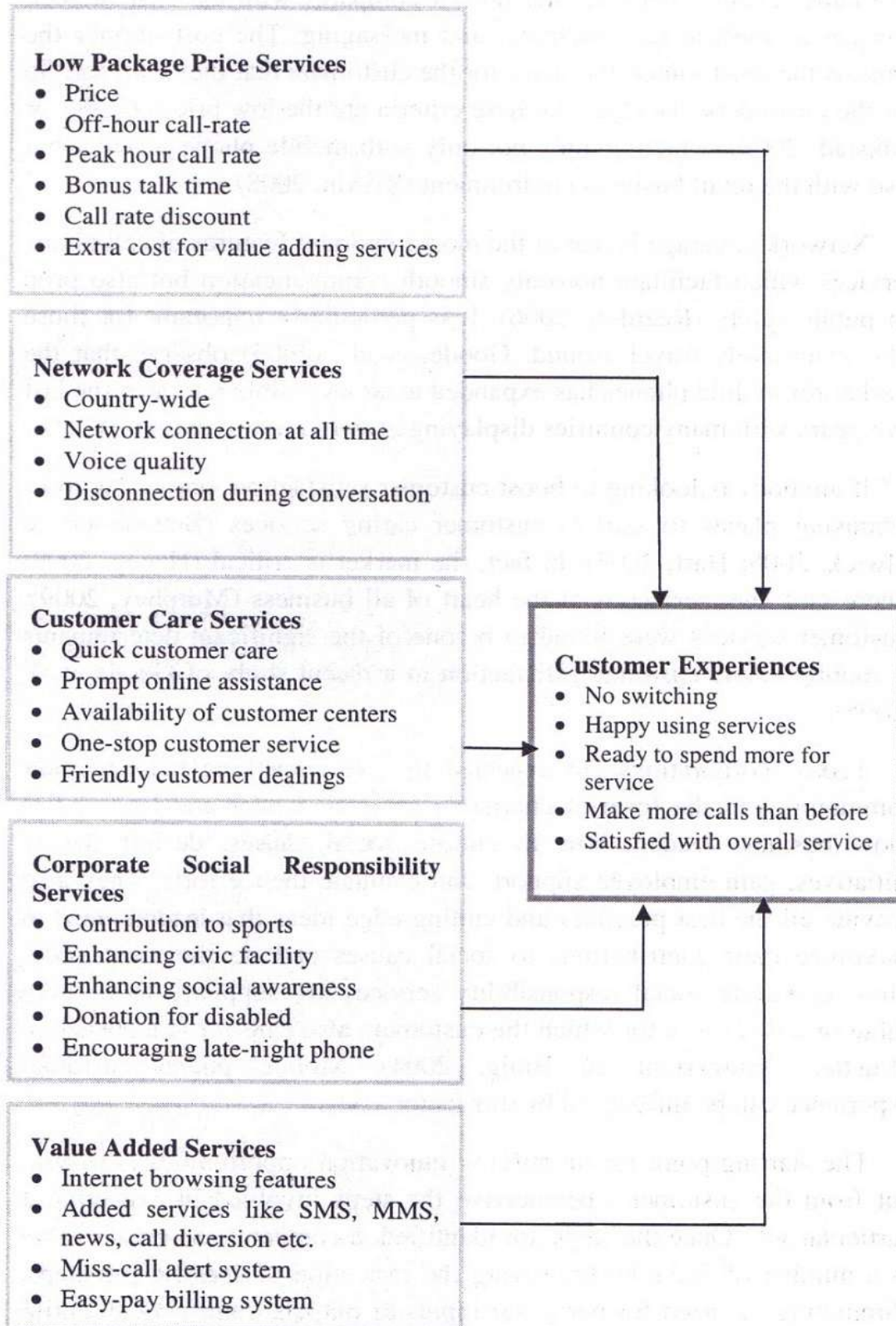
non-utilitarian issues of consumption, where value is right on to a center stage of consumer experience but not on to the utility issues of consumption alone. So far experiences are valuable for the consumers and they are memorable. Experience can be staged as well in different levels. In short, the prime goal of the entire service oriented organizations like this cell-phone company in Bangladesh is to attain the superior or perfect customer experience in the new experience economy.

Case Study Research in Customer Experience: GrameenPhone Bangladesh Limited

Conceptual Framework

This study investigated the different service factors affecting customer experience of the GP, a mobile phone company in Bangladesh. Altogether five types of services related to both techno/socio-economic and psychological issues have been identified that are likely to affect the customer experience, which focuses GP subscribers' perception towards how this company's service gives something important as an expression of satisfactory or dissatisfactory feeling (Narimawati, 2007). The study has presumed five dimensions of services which are oriented with customer experience in getting cellular phone services that include low package price services, network coverage services, customer care services, corporate social responsibility services and value added services (Figure 1).

FIGURE 1: Conceptual Framework for Assessing the GrameenPhone Customer Experience



Anyone who has signed up recently for cell phone service has faced a stern test in trying to figure out the cost of carry forward minutes versus free calls within a network and how it compares with the cost of such services as push-to talk, roaming, and messaging. The cost implies the price as the most important factor for the customers that they care for. So for the customers, package purchase criteria are the low prices (Collis & Rukstad, 2008), which comply not only with mobile phone services but also with the retail business environment (Rivkin, 2008).

Network coverage is one of the most important features of cell phone services which facilitate not only smooth communication but also prop up public safety (Reardon, 2006). It is particularly important for those who extensively travel around. Goode, et al., (2005) observe that the market for mobile phones has expanded at an incredible rate over the last five years with many countries displaying growth rates in excess of 25%.

If anybody is looking to boost customer satisfaction, one of the most promising places to start is customer caring services (Bettencourt & Ulwick, 2008; Hart, 2007). In fact, the market is critical (Heney, 2009) where customer service is at the heart of all business (Murphey, 2009). Customer services were found to be one of the significant determinants of mobile phone customer satisfaction in a recent study of Goode et al. (2005).

Today, corporations are expected to give something back to their communities in the form of charitable projects. Kotler and Lee (2005) show business leaders how to choose social causes, design charity initiatives, gain employee support, and evaluate their efforts. They also provide all the best practices and cutting-edge ideas that leaders need to maximize their contributions to social causes and do the most good. Thus, corporate social responsibility services are supposed to be core value of any society for which the customers also care for (Lichtenstein, Minette, Drumwright, & Braig, 2004). Mobile phone customer experience can be influenced by this factor as well.

The starting point for identifying innovation opportunities is to map out from the customer's perspective the steps involved in executing a particular job. Once the steps are identified, a company can create value in a number of ways by improving the execution of specific job steps, eliminating the need for particular inputs or outputs, removing an entire

step from the responsibility of the customer, addressing an overlooked step, re-sequencing the steps, and enabling steps to be completed in new locations or at different times (Bettencourt & Ulwick, 2008).

Data Sources and Analytical Procedures

The prime thrust of the study is to understand the concept of customer experience and to identify the key service factors that are responsible to influence the overall status of customer perception or customer experience of a mobile phone company of GP in the metropolitan areas of Dhaka city in Bangladesh. Data were collected using self-complete questionnaire. The survey questionnaire method was chosen because a large sample size was taken for the study. Besides, the survey questionnaire provides a “quick means of assessing information” (Zikmund, 1997, p. 203) and the respondents could complete the survey questionnaire items at their own time without affecting their work place productivity. Questionnaire survey is “arguably the most common technique in management research” (Veal, 2006, p. 143).

The service factors included in the investigation as independent variables are low package price services, network coverage services, customer care services, corporate social responsibility services and value added services. The customers under this investigation are meant to range from all walks of life and they were not differentiated on gender and age basis. Based on convenience sampling procedure, 2000 GP customers were surveyed and out of this, 1660 questionnaire were complete and the rests were incomplete and unusable. The data were collected during the period of June to December 2008.

A structured questionnaire in a 5-point scale was used in the survey. The total numbers of questions selected in the questionnaire were 29. In the measurement, scale 1 indicates strongly disagree and scale 5 indicates strongly agree. The reliability test has been performed to verify the internal consistency of the variables obtained in the sample. The overall Cronbach's alpha value is found 0.87, which is substantially higher than the threshold level (0.50) suggested by Nunnally (1978). Several analytical techniques such as Principal Component Factor Analyses, Correlation analyses, Multiple Regression Analyses, and F test have been used to measure the status of customer experience of the selected mobile phone company (i.e GP) in Bangladesh. For data processing purpose SPSS was used in this study.

Analysis and Interpretations

A principal component factor analysis was conducted on the variables related to customer experience, which formed six main factor components with eigenvalues greater than one. Each of the numbers in the third column of the table is a factor loading and can have a value between +1 and -1. A value close to +1 indicates that the variable has a strong positive loading (influence) on that factor and a value close to -1 indicates a strong negative loading. Whilst there is no definitive rule about the cut-off value for considering a variable, this study uses +/- 0.50 factor loading values in each case.

The six identified components account for about 53% of the variance in the data on determinants towards customer experience of the mobile phone corporate namely GP in Bangladesh. This implies about 47% variations could be explained by other factors, which are not included in the model of analyses of this study. The first factor component is the Customer Care Services, which accounts for the most variance (23.97%); this consists of five control variables. Eigenvalue for this factor is 5.753, which indicates that this factor contains more information than the other factors. This factor provides the maximum insights of customer experience of the mobile phone users in Bangladesh. It broadly includes the skills development by training and performance rewards of the company in customer care services. The five antecedents contained in the key factor or control variable of customer care services appraisal are quick customer care, prompt online assistance, availability of customer centers, one-stop customer service, friendly customer dealings. The mean values of these five antecedents are 3.41, 3.18, 3.42, 3.32 and 3.71 respectively. The component mean value is 3.41. In the five point scale, these mean values represent about simply positive level of customer experience. The factor loading points for these variables are considerably higher than that range of 0.60 to 0.73 and Chronbach's reliability coefficient is 75 percent. These imply that the relative importance of this variable is ranked in higher level. Hence, policy makers in the mobile phone company of GP should be more concerned on these variables to increase customer satisfaction of their users.

TABLE 1. Factor Analysis: Customer Experience of the Mobile Phone Company of GP in Bangladesh

Factor Name*	Variables	Factor Loading	% of Variance Explained (Cumulative)	Cronbach's Reliability Coefficient
Customer Care Services (5.753)	• Quick customer care	0.694	23.972 (23.972)	0.7587
	• Prompt online assistance	0.615		
	• Availability of customer centers	0.728		
	• One-stop customer service	0.710		
	• Friendly customer dealings	0.601		
Corporate Social Responsibility Services (1.752)	• Contribution to sports	0.588	7.299 (31.271)	0.8092
	• Enhancing civic facility	0.767		
	• Enhancing social awareness	0.803		
	• Donation for disabled	0.795		
Low Package Price Services (1.657)	• Price	0.511	6.906 (38.177)	0.6677
	• Off-hour call-rate	0.678		
	• Peak hour call rate	0.647		
	• Bonus talk time	0.616		
	• Call rate discount	0.534		
	• Extra cost for value adding services	0.523		
Network Coverage Services (1.373)	• Country-wide network	0.796	5.721 (43.899)	0.7745
	• Network connection at all time	0.824		
	• Voice quality	0.668		
Value Added Services (1.176)	• Internet browsing features	0.683	4.901 (48.800)	0.6666
	• Added services like SMS, MMS, News, Call diversion	0.752		
	• Miss-call alert system	0.650		
	• Easy-pay billing system	0.511		
Network Coverage and Corporate Social Responsibility Services	• Disconnection during conversation	0.585	4.456 (53.255)	
	• Encouraging late-night phone	0.812		

* Numbers in the parentheses in the first column represent eigenvalues of the corresponding factors.

The second most important factor component is the service provided in terms of corporate social responsibility, which explains the variation of customer experience about 7.299 percent. It includes contribution to sports, enhancing civic facility, enhancing social awareness, and donation for disabled antecedents. The mean values of these antecedents are 3.69, 3.36, 3.44, 3.33 and 3.71 respectively, and the component mean value is 3.43 that represent moderate level of customer experience. The eigenvalue for this key factor is 1.752, which signifies modest level of insights as well. The alpha value for this component is more than 80 percent. Thus, service in corporate social responsibility factor is in fact carrying heavy reliance in terms of importance of explaining about the GP customer experience.

The third most important factor is purchase package price, which exhibits eigenvalue and percentage of variance explained 1.657% and 6.906% respectively. Included antecedents in this component are price, Off-hour call rate, peak-hour call rate, bonus talk time, call rate discount and extra cost for value added services. The mean values of them are respectively 3.81, 3.42, 2.90, 3.15, 3.28 and 2.50, and the component mean value is 3.17, which also shows the simply positive level of customer experience.

The fourth most important factor is network coverage services that account for 5.721% of the variance and it broadly network coverage. The items specifically are countrywide network, network connection at all time and voice quality. It has an eigenvalue of 1.373. The mean values of these four items are 3.79, 3.52 and 3.70 respectively. The mean value of the component factor is 3.54 that characterize moderate customer experience level. The factor loading ranges from 67 to 82 percent and the corresponding alpha value is 77 percent, both of which are considerably high and account high score in customer experience.

The component of value added services is also an important factor which explains the variation of 4.901 per cent. The items included in this component are Internet browsing features, added services (like SMS, MMS, news, call diversion etc.), miss-call alert system and easy-pay billing system. The mean values of such components are 3.58, 3.69, 3.72 and 3.61 respectively. The mean value of the component factor is 3.62. Except easy pay billing system, all other items carry high factor loadings. The alpha value is about 67 percent, which is also considerably high.

There is another component which comprises the antecedents included in it, those are disconnection during conversation and encouragement of late-night phone and they belong to network coverage and corporate social responsibility variables respectively. It can explain the variability about 4.46 percent. The factor loading for the encouraging late-night phone is substantially high, which scores 81 percent. So these two antecedents also carry much relative importance according to the customer experience. Thus, the results show that the concerned phone companies should be more careful with those identified factors by which they can achieve higher customer satisfaction and it, in effect, will help to push up the overall productivity and profitability of the company.

Descriptive Statistics and Correlation Analysis

Table 2 presents the means, standard deviations and correlations between all the control variables in the study. On average, study participants estimated their attitudes towards the customer experience in positive sentiment that ranges from moderate to simple agreement. All the mean values of the factors are in favor of that conclusion. Specifically, value added services score the highest level of mean value ($\mu \geq 3.61$) and network coverage services score the second highest ($\mu \geq 3.53$). All the correlations are positively and statistically highly significant ($p < .001$).

TABLE 2. Mean, Standard Deviation and Correlation Coefficient

Factors	Mean	Std Dev.	PP	NCS	CCS	CSRS	VAS
Package Prices (PP)	3.1718	.7511					
Network Coverage Services (NCS)	3.5372	.7589	.274***				
Customer Care Services (CCS)	3.4078	.7792	.373***	.378***			
Corporate Social Responsibility Services (CSRS)	3.4306	.8067	.336***	.313***	.371***		
Value Added Services (VAS)	3.6173	.8015	.297***	.366***	.443***	.433***	
Customer Experience (CE)	3.4095	.7731	.473***	.405***	.481***	.346***	.387***

*P<.05 **p<.01***p<.001 N=1660

Besides, most of the correlation values are appeared to show positive and good associations among the control variables with each other. Overall, the study uncovers the fact that the customers of GP are satisfied with the practicing corporate culture of the companies under this study as the mean value of customer experience is observed to be more than neutral point 3.

Multiple Regression Analysis

In the analysis, simple liner multiple regression technique was used. Overall, customer experience and 5 orthogonal component factors were taken as dependent and independent variables respectively. Results are shown in Table 3. In the table all variables are shown with their respective regression coefficients (β s) and computed students't statistics along with their respective significance level. Results of the regression analyses revealed that all the independent variables are observed to be statistically significant. These results are also consistent to the results found in the factor analyses.

TABLE 3. Results of Multiple Regression Analysis

Factors	Regression Coefficient	Standard Error Coefficient	Computed t
Package Prices	.284	.022	13.138***
Network	.179	.022	8.237***
Covge. Services	.238	.023	10.239***
Customer Care Services	.060	.022	2.681***
Corp. Social Resp. Serv.	.106	.022	4.562***
Value Added Services			

* $p < .05$ ** $p < .01$ *** $p < .001$ Adj. $R^2 = .38$, $F = 205.399$ *** and $N=1660$

The result in ANOVA indicates that F value is considerably high which is statistically significant at $p < .001$ level. This outcome is perfectly consistent with the result of the overall multiple regression tests. From Table 2, it is evident that the mean value of overall customer experience is 3.4095, which imply that the customers in the mentioned mobile phone companies are modestly satisfied.

Discussions

Achieving super customer experience is a highly desirable goal for organizations wishing to improve customer satisfaction and loyalty as well as enhance profitability. In this section, the paper confers the management insights conceived out of the research, highlights on the results based the research model, remarks on the drawbacks of the study and points out further research opportunities. Drawing upon the case study of GP described above, the outcome of the research suggests that organizations seeking to deliver a superior or perfect customer experience should especially focus on the issues that are discussed below.

Identify the Problem and Act on the Opportunity for Improvement

The present case study of GP points to a gap in scoring of its mean value of the experience that the organization is delivering to its customers. The mean score point ($\mu = 3.4095$) of GP's customers experience is 41 percent higher than neutral point scale. The result of this study reveals the fact that GP is delivering a modest level of customer experience, which corresponds to the point scale referred by Jones and Sasser (1995) due to which the customer loyalty and number of users could decline. This implication is consistent with a recent report that the number of mobile phone users decreased by 21 percent in the region of Asia-Pacific including, Bangladesh (The Daily Ittefaq, 22 April, 2009). If the organization is keen to raise the level of customer experience, it has to concentrate into the relative importance of the services that scaled the components in the principal factor analysis (Table 1) based on the corresponding eigenvalues and factor loadings. The company should act upon those particular factor loadings which are below 60 percent, in order to improve their items of services. The focusing point is yet to undertake detailed research, by customer segment, into customer's perceptions of their service experience and to identify opportunities for improvement.

Initiating Appropriate Metrics for Measuring Customer Experience

The Company should illustrate the importance of considering appropriate measures that reflect the customer experience, at each step of the customer interaction. In addition to considering customer satisfaction, it should also be focused on customer dissatisfaction, which can allow the company to spot new important areas for getting better result in customer experience. Customary measures of customer satisfaction may fall short of comprehending deeper and unfulfilled needs of customers. Organizations need to think about other suitable measures, such as the net promoter score, which may more appropriately mirror their judgment of customers' experiences.

Admit the Need for Cross-Functional Integration

One of the key lessons from the case study of GP is that delivering an outstanding customer experience requires a better knowledge of customer needs, and this can only be attained when all staff and

departments in an organization collaborate in a cross-functional manner. For instance, in Table 1, the factor loadings of easy pay billing system, price, friendly customer dealings and extra cost for value adding service require collaboration among different departments of GP in Bangladesh. The value of using a cross-functional team is highlighted in the Parker (1996) which identified one of the key attributes of team player as collaborator.

Enhance Employee Motivation to Achieving Outstanding Customer Care Service

Aside from the benefits to the customer of delivering a better customer experience, this study of GP emphasized that the journey towards delivering superior service helped motivate internal customer satisfaction as well. This point is particularly stressed by a recent study of Homburg et al. (2009, p.5) that states, "Employees and customers might then identify more closely with the company and thus will be more loyal—which ultimately could drive profitability." Hence, the mapping of the superior customer experience induce employees better understanding of customer needs and improved both their performance and satisfaction of their role in delivering improved customer experience.

Based on the research framework and overall results of the study, *customer care services* are the utmost important tasks to accomplish in order to improve the customer experience of the GP in Bangladesh. Customer experience may not improve until it becomes a top priority and a company's work systems and organizational set-up change to reflect that priority. Yet, there is no such information available to the researchers whether GP's leadership went ahead with the real change anyway. However, once persuaded of the importance of experience every other remaining factor has a pivotal role to stage.

Low package price services have to be more attractive. Marketing unit can handle this aspect by collecting data on the tastes and standards of every one of its targeted customers and dispatching the information intra-company and then monitoring all consumer communications accordingly.

Network coverage services need to be wider. With this end in view, the technology unit of the GP can collect, analyze and distribute data

based on monitoring the progress over time. *Corporate social responsibility services* ought to be continued. Urban consumers particularly are very much aware and concerned about it which can induce satisfaction level to a lofty higher stage.

Value added services of the GP should have done a lot more than specify needed features. It should stage experiences as well after observing how customers use value added services, learning why they use offerings as they do and figuring out how presently available features might be frustrating them. Preferably, internal customers of product design will identify customer behavior that runs counter to the expectations of GP and uncover needs that have not yet been discovered.

By and large, like other research and case studies, this paper has limitations that hint to further research opportunities. This study has accomplished only one case study of the GP which is confined to the Dhaka city only in Bangladesh where four/five more mobile companies are left in the market. Additional case studies in other cities of Bangladesh and on other similar companies that consider their respective concerns should provide further insights into how the superior customer experience can be realized and managed.

This paper also underlines the necessity for appropriate measurement tools that help manage the delivery of the customer experience in optimal level. Additional research is required that explores and develops appropriate tools for managing the customer experience in different contexts. Study on the concept of customer experience is at an initial stage. As a company starts on its journey to achieving a super customer experience, it will benefit significantly by benchmarking other companies that have productively reached an outstanding customer experience. This article represents an initial step, identifying case study of a company in Bangladesh that has been seeking an outstanding customer experience highlighting important managerial lessons from its beginning.

AUTHOR NOTES

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Determinants of Firm-Customer Relationship Quality: An Empirical Investigation Using SEM Technique

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ABSTRACT

The aim of the study is to develop and empirically test a conceptual model that demonstrates the determinants of firm-customer relationship quality in the Bangladeshi mobile telecom sector. To test the theoretical model, 630 customers subscribed to different mobile operators in Bangladesh were surveyed. Structural equation modeling was applied to investigate the associations between the constructs in the model. The findings of the study reveal that of the different underpinnings of relationship marketing (RM), communication was the only underpinning having direct, nonetheless, negative impact on firm-customer relationship quality. Results further reflect that the key determinants of relationship marketing are significant predictors of overall satisfaction, which in turn impacts relationship quality.

Keywords: Relationship Quality, Relationship Marketing, Mobile Telecom Sector, Structural Equation Modeling, Marketing of Services.

Introduction

Relationship marketing has emerged over the years as an exciting area of marketing that focuses on building long-term relationships with customers and other parties (Caceres and Paparoidamis, 2007). According to Berry (1995) relationship marketing (RM) is a strategy to attract, maintain and enhance customer relationships. The emphasis is on continuous long-term relationships that leads to repeated market transaction, build loyalty and lead to profitability over the customer 'lifetime' (Ahmed and Rafiq 2002, p. 44) *per se* RM can be also

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explained as a 'transaction plus' approach for marketers. Kavali et al. (1999) points out that relationship marketing is about healthy relationships characterized by trust, equity, and commitment. Other pioneering and scholarly studies (see, for example, Crosby et al., 1990; Morgan & Hunt, 1994; Wong and Sohal, 2002, Ndubisi, 2006) have documented the following constructs namely, trust, commitment, conflict handling and communication as key underpinnings of relationship marketing.

Nonetheless, Chen et al., (2008) states that today's rapidly changing marketing environment is compelling service firms to seek more creative and flexible means for dealing with competition. Ndubisi (2007) further illustrates that only high quality firm customer relationship would deliver the needed competitive edge to gain privileged information about customers and thereby better understand their needs and serve them more satisfactorily than competition. According to Crosby et al. (1990) relationship quality (RQ) has been found to be the core of maintaining a healthy relationship between buyers and sellers. Relationship quality by different authors is explained as an overall assessment of the strength of a relationship, conceptualized as a composite or multidimensional construct capturing the different but related facets of a relationship (Crosby et al., 1990). Levitt (1986) defines relationship quality as a bundle of intangible value, which augments products or services and results in an expected interchange between buyers and sellers. Hence, one of the central issues in the area of relationship marketing discussed till date is the concept of relationship quality and its key determinants (Crosby et al., 1990; Dorsch et al., 1998; Wong & Sohal, 2002; Ndubisi, 2006; Palmatier et al., 2006; Ndubisi, 2007). This is evident from the significant number of studies relating to quality in relationship and its key antecedents that have already been carried out in the context of buyer-seller (salesperson), business to business and international marketing relationship scenarios (Crosby et al. 1990; Morgan and Hunt 1994; Naude and Buttle, 2000; Wong and Sohal, 2002; Lages et al., 2005; Holmlund 2008). In addition, few other limited streams of research have focused on exploring the key determinants and operationalization of relationship quality between the firm (service provider) and its customers (Roger and Anna, 2005; Wong and Sohal 2006; Ndubisi 2007; Chan et al., 2008).

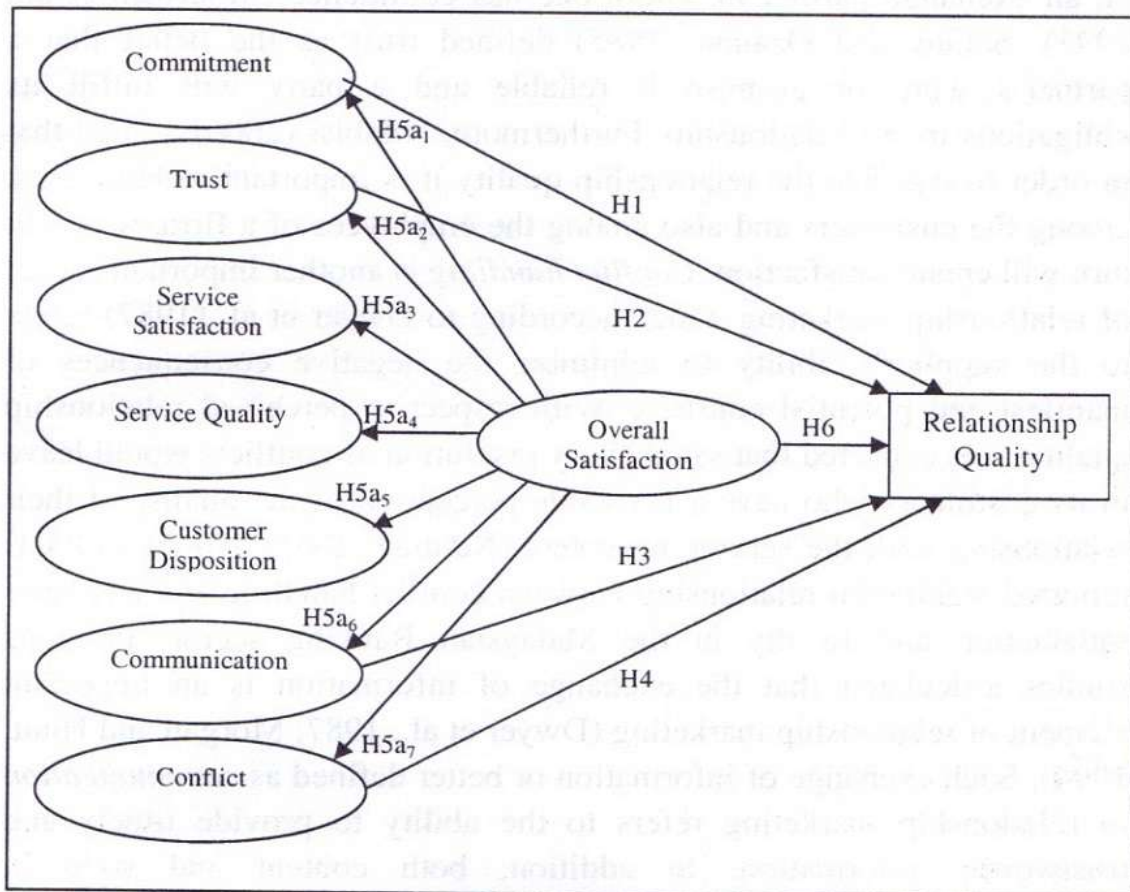
Interestingly, studies that were carried out in the context of sales management and business to business relationship quality have attempted in operationalization of relationship quality in terms of satisfaction and trust. However, this is worrisome as Ndubisi (2007) and Wong and Sohal (2006) argued that in the context of firm (service provider) customer quality relationship, the constructs, satisfaction and trust are clearly antecedents to relationship quality; Even though few other related streams of researches have attempted to investigate the key determinants and underpinnings of firm-customer relationship quality; nonetheless, these studies have limitations of their own. For example, Wong and Sohal (2002) and Ndubisi (2004) came up with limited number of relationship marketing underpinnings impacting the quality of relationship between firm and customers. Chan et al.'s (2008) study, although identifies some key antecedents of relationship quality in the Chinese services setting context, considers trust and satisfaction as indicators of relationship quality. Ndubisi's (2006) study focuses on the overall satisfaction as a mediating variable between underpinnings of relationship marketing (RM) (namely, trust, commitment, communication, conflict handling, service satisfaction and quality) and firm-customer relationship quality (RQ). However, the study failed to show direct associations that may exist between the key determinants of relationship marketing and relationship quality. Ndubisi's (2007) study attempts to prove direct association between four primary underpinnings of relationship marketing namely trust, commitment, communication and conflict handling and firm-customer relationship quality in the Malaysian banking sector but it had its limitation in terms of not exploring overall satisfaction as a mediating variable and not considering all the underpinnings of relationship marketing that may impact firm-customer relationship quality. Given the preceding discussion relating to the gaps and limitations that are existent in previous studies it immediately opens the door for researchers to further investigate and empirically generalize the key antecedents of relationship quality in the context of firm-customer relationships. Hence, this study attempts and reflects the necessity to develop an integrated conceptual model that synthesizes and empirically tests the major antecedents of firm (service provider) customer relationship quality. Subsequently, based on existing literature on relationship marketing, a conceptual model of the key determinants and underpinnings of firm-customer relationship quality is developed and associated hypotheses are tested within the context of Bangladeshi mobile telecom sector.

The Study

The concept of relationship marketing (RM) has emerged within the field of services and industrial marketing (Berry, 1983; Gummesson, 1991). Previous studies mostly have chosen the service sector to investigate the antecedents of relationship quality (De Wolf et al., 2001; Wong and Sohal, 2002; Ndubisi 2007; Chan et. al, 2008). Per se, the service industry is expanding rapidly throughout the world and the contribution of service sector towards economic activities is also increasing. This phenomenon is also true for Bangladesh. In recent times the mobile telecommunication industry (currently consisting of six mobile operators namely GrameenPhone, Aktel, Banglalink, CityCell, Teletalk and Warid) is one of the major contributors in terms of revenues, employments and infrastructure development. Bangladesh's phone sector witnessed a 120 percent growth from January 2006 till now, with the numbers of users rising to 22 million from 10.8 million in 13 months (Chowdhury et al., 2006; Ratan et al., 2007) and expansion of mobile services in Bangladesh has contributed an additional US \$650 Million to GDP and created nearly 240,000 high wage jobs (Bogle, 2006). According to Ratan et al. (2007), mobile operators in Bangladesh in recent time are gradually trying to gain competitive edge by offering innovative services and leveraging firm customer relationship quality.

Consequently, based on existing relationship marketing and social psychology literatures (Crosby et al., 1990; Wong and Sohal, 2002; Grace 2005; Wong and Sohal, 2006; Ndubisi, 2006; Palmatier et al., 2006; Ndubisi 2007), an integrated conceptual model (as shown in Figure 1) depicting the key antecedents of relationship quality is formulated and tested in the context of the Bangladeshi mobile telecom sector.

FIGURE 1. Conceptual Path Model of the Antecedents to Firm-Customer Relationship Quality



Theoretical Background and Research Hypotheses

According to previous studies (Crosby et al., 1990; Dwyer et al., 1987; Ndubisi, 2006, Wong and Sohal, 2006) relationship quality is a higher order construct composed of the four primary relationship-marketing underpinnings, namely commitment, trust, communication and conflict handling. *Commitment* is a factor that affects the level of relationship between a customer and an organization. Moorman et al. (1992) have defined commitment as an enduring desire to maintain a valued relationship. Wilson (1995) argues that commitment is the most common dependent variable used in buyer-seller relationship studies. Commitment, *per se* is one of the important variables for understanding the strength of a marketing relationship, and it is a useful construct for measuring the likelihood of customer loyalty as well as for predicting future purchase frequency (Dwyer et al., 1987; Morgan and Hunt, 1994,

Wong and Sohal, 2006). *Trust* is also considered as a dimension that precedes relationship quality. It has been defined as a willingness to rely on an exchange partner in whom one has confidence (Moorman et al., 1993). Schurr and Ozanne (1985) defined trust as the belief that a partner's word or promise is reliable and a party will fulfill its obligations in the relationship. Furthermore, Ndubisi (2006) argued that in order to enhance the relationship quality it is important to build trust among the customers and also among the employees of a firm, which in turn will create satisfaction. *Conflict handling* is another important aspect of relationship marketing which according to Dwyer et al. (1987) refers to the supplier's ability to minimize the negative consequences of manifest and potential conflicts. With respect to perceived relationship quality, it is expected that satisfactory resolution of conflicts would leave in its customers who have a favorable perception of the quality of their relationship with the service providers (Ndubisi, 2007). Ndubisi (2004) reported significant relationship between conflict handling and customer satisfaction and loyalty in the Malaysian Banking sector. Previous studies articulated that the exchange of information is an important element of relationship marketing (Dwyer et al., 1987; Morgan and Hunt, 1994). Such exchange of information or better defined as *communication* in relationship marketing refers to the ability to provide timely and trustworthy information. In addition, both content and style in communication are important in building quality relationship with customers (Crosby et al., 1990; Ndubisi and Chan, 2005).

Given the preceding discussion it can be articulated that high quality relationship can reduce customers' perceived risk, and further, trust, commitment, communication, conflict handling can enhance relationship quality. Therefore it is logical to expect association between the four primary relationship-marketing underpinnings and overall relationship quality. This is further supported by the empirical evidences cited in the studies carried out by Wong and Sohal (2006) and Ndubisi (2007). Wong and Sohal (2006) found significant association between trust, commitment, relationship strength and quality in the Australian retail environment. Ndubisi (2007) found direct and significant association between trust, conflict handling and relationship quality in the Malaysian banking sector. Empirical validity of the mentioned supposition discussed so far is sought in this paper within the proposed conceptual framework. Thus we propose that:

- H1. Commitment has significant positive impact on relationship quality
- H2. Trust has significant positive impact on relationship quality
- H3. Conflict handling has significant positive impact on relationship quality
- H4. Communication has significant positive impact on relationship quality

Due to increased market-place competition and buyer sophistication within the past 30 years, one of the key emerging themes within the realms of marketing has been that of customer satisfaction (Grace, 2005). Customer satisfaction is generally described as the full meeting of one's expectations (Oliver, 1980). The confirmation/disconfirmation theory (for example, see Churchill and Surprenant, 1982; Oliver, 1980) does not distinguish different types of expectations, and thus does not make a distinction between expectations towards the core service and expectations towards the supplier providing the service. Nowadays the expectations from a product or service, incorporates both and this is very much suitable for telecom companies where interaction with the customers is essential. In addition to expectations towards the core services, customers are may also have expectations towards the service providers regarding their communication, commitment, conflict handling and trust. Furthermore, prior studies (Selnes, 1998; Ndubisi and Chan, 2005 and Ndubisi, 2006) have also revealed that service providers can impact relationship quality by satisfying them 'in-deed' comprising of elements such as commitment, trust and conflict handling and 'in-speech' comprising of the relationship marketing underpinning communication. Therefore, in view of the literature, the following hypotheses are proposed:

- H5a₁: Commitment is a significant indicator of overall satisfaction
- H5a₂: Trust is a significant indicator of overall satisfaction
- H5a₆: Communication is a significant indicator of overall satisfaction
- H5a₇: Conflict handling is a significant predictor of overall satisfaction

In addition, Ndubisi's (2006) relationship quality antecedent model reveals that service quality and service satisfaction are also elements of the behavioral (in-deed) dimension that leads to overall satisfaction with

the services provided by Malaysian Banks. According to Gronroos (1984), service quality is a perceived judgment, resulting from an evaluation process where customer compares their expectations with the service they perceive to have received. Through research conducted by Morgan and Piercy (1992), it was found that both the core outcome aspects and the process aspects of the service delivery leads to satisfaction and is based on an evaluation of the service encounter. The perceived quality of the functional and the technical service dimensions including tangible and intangible dimensions of the total offering could influence the level of customer (service) satisfaction (Gronroos, 1988).

Grace (2005) defines "consumer disposition toward satisfaction" (CDS) as *the consumer's general tendency to be sufficiently satisfied with the purchase and consumption of the goods and services they utilize*. Furthermore, Grace (2005) demonstrates that CDS is not another expression of customer satisfaction, but rather it represents an individual consumer characteristic, thus exerting influence on the consumer's cognitive and emotive reactions (customer satisfaction). CDS further gives insights into why some customers are easily satisfied while others are not (Zeithaml et al., 1993; Grace, 2005). Therefore, beyond the total offerings, dimension of service providers in terms of 'in-deed' and 'in-speech' perspectives there is a necessity to explore if another dimension in the form of consumers' 'personal trait/disposition' impacts overall satisfaction. Furthermore, prior studies (Gronroos, 1988; Morgan and Piercy, 1992; Ndubisi and Chan, 2005) reveal that service provider's total offering in terms of all the elements of 'in-deed' and 'in speech' dimensions influences overall satisfaction, which in turn influences or leverages quality of relationship between firms and customers (Ndubisi, 2006). Therefore, against these backdrops it can be proposed that:

H5a₃: Service satisfaction is a significant indicator of overall satisfaction

H5a₂: Service quality is a significant indicator of overall satisfaction

H5a₆: Consumer disposition towards satisfaction (personal trait) is a significant indicator of overall satisfaction

H6: Overall customer satisfaction has significant positive impact on relationship quality

Research Method

Sample and Data Collection Procedure

The sample of customer responses was drawn using a cluster sampling technique from Dhaka, the capital city of Bangladesh. Based on residential area based segments, the city was divided into major residential areas such as Banani, Gulshan, Uttara, Mohammadpur, Mirpur and Farmgate. From each of the major residential areas a neighborhood shopping centre having, at least one mobile service shop, was chosen as the interview site. Then, a mall intercept survey method was utilized by four research assistants recruited from a private university. The interviews were conducted at different times of the day for duration of 15 days to every 2nd person (above 18 years of age and active subscriber of any one of the mobile phone operators) until the 250th interview was completed in each of the selected shopping centers. Among all collected data set of 700 respondents, 630 were found satisfactory for data analysis. Occasional missing data on variables was handled by replacing them with the mean similar to the method used in Turkilmaz and Ozkan (2007) study. Ndubisi's (2005) study argues that if relationship quality varies among service providers it might confound results while interpreting the antecedents of firm customer relationship quality. Therefore for the purpose of our study we conducted ANOVA analysis to test if consumer perception varied among the six mobile operators firm customer relationship quality. ANOVA results showed no statistical differences among the various mobile operators with respect to relationship quality ($F=2.92$; sig. $=0.53$), thus inferring absence of confounding effect.

The sample consisted of 59.4 percent male and 40.6 percent female respondents. In terms of age, 17.1 percent of the respondents were between 18 and 26 in years, 31.6 percent between 26 and 34, 20.5 percent between 35 and 43, 18.3 percent between 44 and 51, 12.5 percent above age of 51 and 13.7 above 38 years. 34.9 percent of the respondents had income range below 10000 Bangladeshi Taka (BDT) per month. 27.9 percent had income range between 10001 and 20000 (BDT), 11.7 percent between 20001 and 30000 (BDT), 6.2 percent between 30001 and 40000 (BDT) and 19.2 percent above the income range of 40000 (BDT). The sample comprised of different professional people including

15.1 percent students, 11.7 percent housewives, 55.9 percent employed in different jobs from the private service sector, 6.8 percent government employees and 10.5 percent businessmen. In terms of contractual agreement/relationship with the operators 66.3 percent of the respondents were pre-paid users and the rest that is, 33.7 percent post paid subscribers.

Measurement Instrument

An instrument (questionnaire) of 41 items was administrated in order to empirically investigate the hypotheses pertaining to the conceptual meta-model representing the antecedents of relationship quality. The questionnaire items for the sub constructs communication, conflict handling, trust, commitment, communication, service satisfaction and quality were adapted basically from the study conducted by Ndubisi (2006), Wong and Sohal (2006) and Ndubisi (2007) in the Malaysian banking sector. As far as the relationship quality construct was concerned it was derived from Oliver (1980) and Wong and Sohal's (2006) study. Items relating to consumer disposition towards satisfaction (CDS) was adapted from Grace's (2005) study. Some of the wordings were changed in the adapted items so that the constructs were relevant to the mobile telecommunication sector. Individual items representing each of the constructs along with their overall internal consistency and factor loadings results (using principal component approach and varimax rotation) are shown in the Table 1. All items were measured on a five point likert type scale with 5= strongly agree and 1= strongly disagree. The questionnaire also included various socio-demographic questions.

TABLE 1. Factor and Reliability Analysis

Construct and Items	Factor Loadings	Reliability Estimates
<i>Service satisfaction (SS)</i>		0.78
I am happy with my mobile phone operator's/company's services	0.69	
I have good experience with my mobile phone operator's services	0.71	
I am pleased with what the mobile operator does for me.	0.56	
The mobile operator's services are satisfactory	0.56	
<i>Relationship quality (RQ)</i>		0.79
I have good relationship with my mobile company/operator	0.70	
My relationship with the mobile operator is as per expectation	0.65	
My relationships with the operator meet my goal	0.50	
<i>Commitment (CMT)</i>		0.81
Mobile operator offers personalized services to meet customer needs	0.75	
The mobile operator is flexible when its services are changed	0.81	

The mobile operator is flexible in serving my needs	0.80	
<i>Trust (TRS)</i>		0.76
The mobile phone company is concerned about security of my calls	0.57	
The operator's words and promises are reliable	0.54	
Employees of the operator shows respect to customers	0.53	
I have confidence in the operators' services	0.55	
<i>Quality (QL)</i>		0.76
Operator has adequate knowledge about telecommunication services	0.77	
The operator has adequate knowledge about the market trend	0.76	
The operator shows professionalism in its services	0.70	
My operator meets or fulfils my expectation	0.56	
<i>Communication (COM)</i>		0.79
Operator provides timely information regarding any services change	0.74	
Operator provides accurate information about changes in call rates	0.81	

The operator provides information on its new services	0.76
<i>Conflict handling (CFH)</i>	0.72
The operator tries to avoid potential conflicts	0.73
Operator has ability to openly discuss solutions when problems arise	0.73
The operator tries to solve conflicts before they create problems	0.74
<i>Consumer Disposition (CDS)</i>	0.70
Usually I am pleased with my mobile operating company	0.71
More often, I am a satisfied consumer of my mobile operator's services and products	0.71
I generally find the mobile operator's services I buy don't live up to my expectations	0.56
Quite often I am dissatisfied with my purchases from my mobile operating company.	0.50
Overall, I am usually satisfied with the purchase that I make from my mobile operating company	0.66

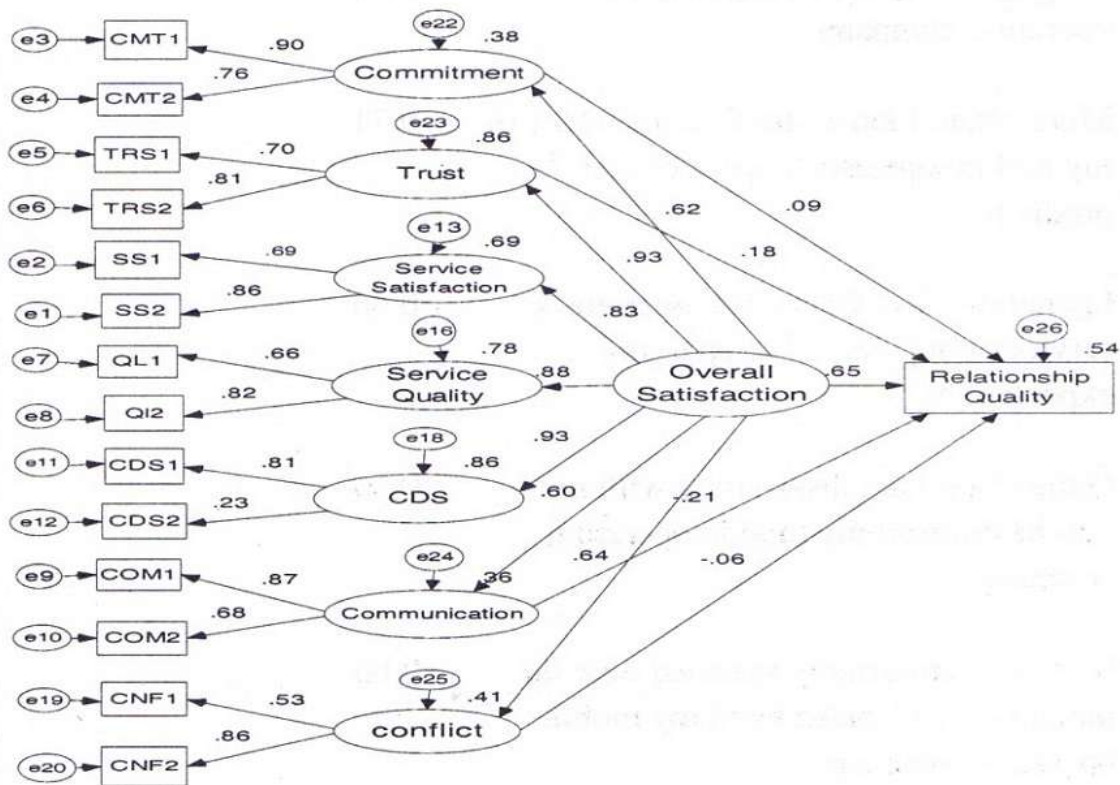
KMO = 0.911, Total variance = 65.67 %

Analysis and Results

Modeling and Hypothesis Testing

A confirmatory factor (CFA) analysis using AMOS 7 software was carried out on the model (i.e. the structural equation modeling) to test the hypothesis developed based on the conceptual framework of the antecedents of relationship quality (Nguyen, 2007). To assess the model fit and construct validity, the overall model chi-square (χ^2), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), confirmatory fit index (CFI), the Tucker-Lewis Index (TLI), root mean square (RMR) and root mean square of approximation (RMSEA) values were used (Hair et al., 1998; Wang and Chen, 2004). The structural equation model was treated as shown in Figure 2, using the maximum likelihood method (ML) as the results of MLE correspond to events that are likely to occur based on the observed variance-covariance matrix.

FIGURE 2. The Structural Equations Model



Furthermore, in order to retain complexity and enhance the robustness of the overall model fit, a partial disaggregation technique was adopted to explain the various underpinnings of relationship

marketing impacting the higher order constructs namely overall satisfaction, which in turn affects relationship quality (Wong and Merrilees, 2007; Ferdous and Towfique, 2008). The technique was applied as it combines items into composites to reduce higher levels of random error, yet it retains the advantages of structural equations and is capable of dealing with data problems (Bagozzi and Heatherton, 1994; Wong and Merrilles, 2007). In addition, Wong and Merriless (2007) and Ferdous and Towfique (2008) argues that a partial disaggregation approach, in which constructs are represented by subsets of test items, has been found to lead to more interpretable and meaningful results. Consequently, in order to accomplish the partial disaggregation items related to the different first order latent factors of the second order construct, overall satisfaction and relationship marketing was randomly aggregated so that two combined indicators instead of several items/indictors explained the first order latent variables considered in the study. Relationship quality was taken as the observed variable in the structural model and three items explaining the construct firm customer relationship quality was aggregated by averaging of scores into a composite relationship quality score.

The structural equation modeling results indicate that the meta-model has good fit to the data, with GFI=0.944, AGFI= 0.916, TLI= 0.934, CFI=0.950, RMR=0.037 and RMSEA=0.061. The chi-square value was 263.07 with 79 degrees of freedom and p value less than 0.01. However, as the sample size becomes more than 200, the chi-square test becomes sensitive and its significance test less reliable (Hair et al., 1998; Wong and Merrilees, 2007). Considering, the complexity of the model and the sample size of 630 ($n > 200$) in our study and all other fit index showing acceptability values, the structural model shows good fit of the data (Hair et al. 1998, Chan and Cui, 2004; Nguyen, 2007; Wong and Merrilees, 2007; Ferdous and Towfique, 2008).

Table 2 shows the unstandardized path estimates, critical ratio (standard error) and p values of the relationship quality model. Overall satisfaction accounted for 53.7 percent variance in explaining firm customer relationship quality. All the path (unstandardized) estimates as shown in Table 1 have critical ratios (equivalent to t values) over acceptable value of 1.96 (Hair et al., 1998, Nguyen, 2007). As predicted by hypotheses, first order latent variables namely communication, trust,

commitment, conflict handling, consumer disposition, service satisfaction and quality are found to significantly predict the second order construct overall satisfaction, which in turn significantly influences relationship quality (H6). Communication (H4) was the only construct which showed direct but negative significant association with firm-customer relationship quality in the Bangladeshi mobile telecom sector. Hence, it indicates that an incremental unit change in communication among consumers in the Bangladeshi mobile telecommunication sector results in 0.205 unit decrease in firm customer relationship quality. This is an interesting result of the study since the findings reflect that, on the one hand, communication has significant direct negative effect on relationship quality, but on the other hand, it has a positive effect on the overall customer satisfaction which in turn has positive effect on relationship quality. Hence, it indicates that mobile service operators should give more importance on delighting customers via communication and then translate customers' satisfaction into long lasting quality relationship between the two parties involved.

TABLE 2. Unstandardized Structural Paths for the Proposed Meta-Model

Hypotheses	Estimate	C.R.	p-value
H1 Commitment → Relationship Quality	0.336	1.864	0.062
H2 Trust → Relationship Quality	0.336	0.934	0.348
H3 Communication → Relationship Quality	-0.436	-4.269	0.000
H4 Conflict Handling → Relationship Quality	-1.011	-1.232	0.218
H5a ₁ Commitment → Overall Satisfaction	1.076	9.916	0.000
H5a ₂ Trust → Overall Satisfaction	1.344	13.641	0.000
H5a ₃ Service Satisfaction → Overall Satisfaction	0.781	13.452	0.000
H5a ₄ Service Quality → Overall Satisfaction	1.319	13.452	0.000
H5a ₅ Consumer Disposition → Overall Satisfaction	0.448	4.833	0.000
H5a ₆ Communication → Overall Satisfaction	0.772	8.784	0.000
H5a ₇ Conflict Handling → Overall Satisfaction	1.028	11.113	0.000
H6 Satisfaction → Relationship Quality	1.791	3.017	0.003

Univariate Analysis

Univariate analysis was further carried out to check if relationship quality differed across different demographics considered for the purpose of this study. To examine these differences independent sample t-test and one-way analysis of variance (ANOVA) was conducted (Ndubisi, 2006). Independent sample t-test and ANOVA revealed that there were no significant differences in relationship quality with respect to all demographics under investigation (gender, age, occupation, location and user status i.e. post or pre-paid) at a 5 percent significance level.

Discussions

A study investigating and synthesizing the antecedents of relationship quality between firms (service providers) and customer has not been carried out in-depth so far especially in the context mobile telecom sector and in emerging and/or developing economies. Consequently, this paper adds to the dearth of studies on firm-customer relationship quality.

In order to empirically validate the proposed conceptual model, a structural equation modeling approach was considered. In addition, a partial dis-aggregation technique was applied to retain the complexity of the model and enhance the robustness of the model. Based on previous relationship marketing literature, various underpinnings namely trust, commitment, conflict handling, communication, consumer disposition, service satisfaction and quality were all treated as the first order latent variables. Overall satisfaction was treated as the second order latent factor and relationship quality as the observed variable.

The path results from the partially disaggregated structural equation modeling revealed that all the underpinnings of relationship marketing and consumer trait considered in this study are significant predictors of overall satisfaction, which in turn positively affect relationship quality in the mobile telecom sector of Bangladesh. The only direct and significant association was found between communication and relationship quality. The present study reveals that the different underpinnings namely commitment, trust and conflict handling are mediated by how consumers are overall satisfied before they have any considerable impact on relationship quality in the mobile telecom sector. Even though

communication has significant impact on relationship quality, from a practical point of view organizations should emphasize on first satisfying customers and then turn customer satisfaction into positive relationship quality.

Results from the univariate analysis revealed that there were no significant differences in relationship quality with respect to all demographics under investigation namely gender, age, education, occupation, location and user status.

Managerial Implications

This study has provided some important managerial implications for marketing practitioners to better understand and manage customer relationships especially in the mobile telecommunication sector. A key implication for mobile industry is operators should emphasis on building trust, keeping promise, resolving conflicts, maintain quality performance (in-deed) and communicate with an outside-in-approach (in-speech) so that consumers are satisfied with the operators' services. Such strategic approach according to the findings of this study should in turn help the mobile operators/service providers to strengthen the quality of relationship with the subscribers/consumers. Furthermore, it is also necessary for service organizations to realize that consumer satisfaction will vary depending on their individual trait or disposition toward satisfaction (personal trait). Hence mobile operators need to tailor their service offering as much as possible so that ultimately it affects the expressed satisfaction level of consumers, which in turn positively impacts relationship quality.

The rather surprising finding in this study concerning direct and negative significant path between communication and firm-customer relationship quality should be taken with lot of importance by practitioners in the Bangladeshi mobile telecom sector. In the recent years, most of the media time and space have been consumed and occupied by the mobile telecom companies in the Bangladeshi market. Most consumers are overloaded with TV commercials sponsored by the telecom companies. In addition, even consumers subjected to the print media are being cluttered with print advertisements belonging to the mobile operators. By doing so, these mobile operators are compelling the subscribers to often misjudge the basics of communication in positive

relationship building, such as means providing trusted information on services, fulfilling consumer promises, and providing information if delivery problem occurs. As a result the messages sent by the telecom operators are decoded with a negative impression among the mobile subscribers. Thus it is high time that management of these mobile operators designs communication programs that are well accepted by subscribers and subsequently contributes in 'delighting' customers so that they ultimately strengthens relationship quality between service providers and customers.

Conclusions and Future Research Direction

The results of this study need to be viewed in light of its limitations. First, the proposed conceptual model was tested only in the mobile telecommunication sector of Bangladesh, an LDC. Thus findings cannot be generalized to other service sectors and for other economies. Therefore, it is necessary for testing the model in other services sectors and in other countries. Second, the study only tested for the antecedents of relationship quality. Future studies may also focus on the consequences of relationship quality such as purchase intention, loyalty, and so on, giving researchers and practitioners a meta-analytic view of the antecedents and consequences of relationship quality.

AUTHOR NOTES

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Growth Performance of Non-Food Grains Under the Crop Diversification Program (CDP) in Bangladesh

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ABSTRACT

The present study attempts to estimate the growth performance of non-food grains such as pulses, oilseeds, potato, mustard, groundnut and linseed in Bangladesh. The objectives of the study were to estimate the growth rates of acreage and production of these crops before the crop diversification program (CDP) period and during the CDP period using time series data from 1974/75 to 2007/08. The exponential growth rate model and analysis of variance (ANOVA) model were used in this study. The findings of the study indicated that the growth of area for the crops of pulses, oilseed and potato increased before pre-CDP periods and decreased for the crops of mustard, groundnut and linseed. However, the growth of production increased in pre-CDP periods for the all crops. On the other hand, only the crop area for potato increased during CDP period. Consequently the production of potato increased during CDP period. The stability test between the periods showed that the growth performance of areas for the crops of pulse, oilseeds, mustard, groundnut and linseed were better during crop diversification period than pre-crop diversification period. In case of potato, both the growth performance of area and production were better in pre-CDP periods than during CDP periods.

Keywords: Growth Performance, Crop Diversification Program, Production, and Statistical Model.

Introduction

In recent years, stagnation or very slow growth of potato, pulses and oilseeds played a significant role in our economy and is a serious concern

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for the planners and policy makers in Bangladesh. The contribution of the cultivated areas of pulses, oilseeds and potato of the major agricultural cropped areas are 5.45%, 4.47% and 1.09% and its production are 0.60%, 0.56% and 1.80% respectively (BBS, 1999). In regard to oilseeds, mustard and linseeds dominates the other minor oilseeds crops and its share in total oilseeds' cropped areas are 61.21% and 12.47%, whereas its production was 52.59% and 10.36%, respectively (BBS, 1999). Since oilseeds are the major source of oil in Bangladesh, the production affects the domestic availability of edible oil significantly. The continued stagnation in oilseeds production and ongoing rising demand for edible oil has led to an ever widening gap between their supply and demand and this gap is filled up by imports.

Fish and meat are the main source of protein in Bangladesh but in recent years there has been a huge shortage in fish and meat consumption in Bangladesh. To make up the deficiency in protein, pulses can play a role of cheap protein supplier in the absence of animal proteins. On the other hand, potato is one of the main sources of starch and the people of Bangladesh are showing tendencies to choose potato based food instead of rice. Thus, potato also plays an important role in substituting rice consumption in Bangladesh.

This paper attempts to compare the growth rate of areas and production of potato, pulses and oilseeds between the period 1974-75 to 1985-86 (pre-crop diversification program - CDP) and the period 1986-87 to 2007-08 (the CDP period) and also to explore the stability of the growth rates between the pre CDP period and during the CDP period.

There was a large number of research on pulses, oilseeds, mustard, linseed, potato and groundnut in the subcontinent especially in India (Ramasamy and Selvaraj, 2002; Joshi and Saxena, 2002 and Kumar et al., 2002). Most of the researchers conducted research on particulars slow growth crops such as pulses, mustard, oilseed, potato, linseed, groundnut and so on using secondary data. They estimated the growth performances of areas and production of slow growth crops. In addition, Indian Society of Agricultural Economics have organized two annual conferences on slow growth crops such as oilseeds, potato, groundnut, linseeds, mustard etc and a large number of abstracts of the presented papers were accumulated in the special issues (Vol. 48, pp.373-447, 1993 and Vol. 57, pp. 372-416, 2002). However, only few researchers have conducted research on pulses, oilseeds, potato, (Haque, et. al., 1996; Akbar, 1995;

Ahmed, 1984) and other field crops, and they estimated the growth rates over the period, but they did not explore the growth rates of these crops during the CDP period and pre-CDP period. This paper aims to estimate the growth rates of areas and production of the pulses, oilseeds and potato between the pre CDP and CDP period and also determine the structural break of the two periods. It is, therefore, expected that the study will provide useful information for the policy makers of Bangladesh.

Methodology of the Study

The present study is based on the secondary data collected from Bangladesh Bureau of Statistics (BBS) published by the Ministry of Planning of Bangladesh Government (For details, Appendix A and B). Time series data were used to estimate the exponential growth rates of area and production of pulses, oilseeds, potato, mustard, groundnut and linseed for the pre CDP (1974/75 to 1985/86) and the CDP periods (1986/87 to 2007/08). Dummy variables techniques were used to find out the stability of growth rates of these crops between the two periods. The crop areas and production are calculated in acres and metric ton respectively.

Analytical Techniques

On the basis of the objectives, different growth rate models such as linear regression model, semi-log model, double-log model, log-log inverse model and reciprocal model have been run. But among the above models the double-log model seems the most appropriate to analyze the data. An exponential function of the following form was fitted to the data to compute the growth rates of areas and production of pulses, oilseeds, potato, mustard, groundnut, and linseed:

$$Y_{it} = a_i e^{b_i t}$$

$$\text{or } \ln Y_{it} = \ln a_i + b_i t \quad (i = 1, 2, 3, \dots, 6 \quad \text{and } t = 1, 2, \dots, 34)$$

where, \ln = Natural logarithm and b is the growth rate. Percentage of exponential growth rate was expressed by multiplying b with 100. Such a

model has been used to estimate the growth performances of different varieties in Bangladesh (Alam, 1992).

There are two methods that can be used to find out the structural break between two periods. These are the chow test as suggested by Chow (1960) and the dummy variable technique. But the dummy variable technique is better fitted than the chow test to trace the structural break between the pre CDP period and the CDP period. The following model was applied to study the stability of the growth rates of areas and production between the pre and post CDP periods:

$$\begin{aligned}\log A_{it} &= \log \alpha_{i0} + \alpha_{i1}t + \alpha_{i2}D_1 + \alpha_{i3}(D_1t) + u_{it} \\ \log P_{it} &= \log \beta_{i0} + \beta_{i1}t + \beta_{i2}D_1 + \beta_{i3}(D_1t) + v_{it} \\ &\text{where, } i=1,2,\dots,6 \quad \text{and } t = 1,2,\dots,34\end{aligned}$$

A and P denote area and production, respectively.

i = Pulses, oilseeds, potato, mustard, groundnut, and linseed

t = Time trend

D = 1, for pre-CDP period;

= 0, other wise

β_0 = intercept

$\alpha_1, \alpha_2, \alpha_3$ = Regression coefficients of crop area.

$\beta_1, \beta_2, \beta_3$ = Regression coefficients of crop production.

Durbin-Watson (D-W) (Koutsoyiannis, 1977) statistic was used to detect the autocorrelation of the area and production of pulses, oilseeds, potato, mustard, groundnut, and linseed from 1974/75 to 2007/08.

Results and Discussions

The growth performances of main non-food agricultural crops such pulses, oilseeds, potato, mustard, groundnut, and linseed are presented in Table 1, Table 2 and Table 3. Table 1 shows the rate of growth of areas for all crops for pre CDP (1974/75-1985/86) and during CDP (1986/87-2007/08) periods, Table 2 shows the rate of growth of

production of all crops for pre CDP and the CDP periods, and Table 3 reflects the rate of growth of areas and productions, of all crops for the year 1974/75 to 2007/08.

The areas of pulses have increased significantly in pre-CDP; however, it has declined significantly during the CDP periods (Table 1). As a result, production has significantly increased in pre-CDP period but declined during CDP periods (Table 2). In general, for both periods, it can be said that the cost-benefit ratio of pulses compared to other crops, especially to *boro* rice, have discouraged farmers from pulses production. Categorically, different reasons can also be spelled out for two periods. Pulses are rich source of protein; therefore, these can supplement the costly animal protein in the country. Bangladesh is essentially poor in protein supply. When the malnutrition was a lesser concern to the government in the pre CDP period, pulse production had received less priority in the cropping plan. As such, pulse area and production did not increase in this period. In addition, unfavorable cost-benefit ratio of pulses, natural hazards might have affected areas and production after 1985/86. On the other hand, Figure 1 and Figure 2 reveal that both areas and production of pulses have increased rapidly in 1985/86 and could not keep the same pace, so both areas and production have declined sharply in the following years. This can be explained by the fact that the program could have supported producers at the beginning of the program. So the farmers were encouraged and consequently, both areas and production have increased since the beginning. But, over time, the CDP program could not keep pace with the interest of the farmers. This, coupled with unfavorable benefit-cost ratio, disasters, inadequate extension support, increased emphasis on HYV rice and wheat (Ministry of Planning, 2000) which might have affected the growth rate of areas and production of pulses during the CDP period. Almost a similar explanation can be given for mustard, and groundnut. Nevertheless, growths of potato and linseed areas and production have significantly increased in both periods. This explains the fact that the benefit-cost ratios of these two crops were much favorable to farmers compared to the crops discussed above.

TABLE 1. Exponential growth rate of areas of pulses, oilseeds, potato, mustard, groundnut and linseed from the period 1974-75 to 1982-83 and 1985-86 to 2007-08

Crops	1974-75 to 1985-86				1986-87 to 2007-08			
	Coefficients	R ²	T-ratio	D-W	Coefficients	R ²	T-ratio	D-W
Pulses	0.08184* (0.02393)	0.54	3.42	1.12	-0.048136* (0.004957)	0.83	-9.71	0.33
Oilseeds	0.05973* (0.01829)	0.52	3.27	1.04	-0.028557* (0.004957)	0.82	-9.47	0.41
Potato	0.023595* (0.005680)	0.63	4.15	1.76	0.063347* (0.004958)	0.89	12.78	0.91
Mustard	-0.003753 (0.003106)	0.13	-1.21	1.53	-0.010372*** (0.006135)	0.13	1.70	0.66
Groundnut	-0.006685 (0.008470)	0.06	-0.79	0.77	-0.008304 (0.005914)	0.09	1.40	0.98
Linseed	-0.006882 (0.004307)	0.21	-1.60	0.94	-0.13093* (0.03167)	0.46	-4.13	0.65

Notes: (i) *, ** and *** indicate 1%, 5% and 10% level of significance, respectively.

(ii) The figures in parentheses indicate standard error.

(iii) D-W indicates Durbin-Watson statistic.

TABLE 2. Exponential growth rate of production of pulses, oilseeds, potato, mustard, groundnut, and linseed from the period 1974-75 to 1985-86 and 1986-87 to 2007-08

Crops	1974-75 to 1985-86				1986-87 to 2007-08			
	Coefficients	R ²	T-ratio	D-W	Coefficients	R ²	T-ratio	D-W
Pulses	0.07885* (0.02618)	0.48	3.01	0.97	-0.039013* (0.004573)	0.78	-8.53	0.31
Oilseeds	0.06672* (0.01549)	0.65	4.31	1.04	0.009658 (0.007044)	0.09	1.37	0.84
Potato	0.035976* (0.006917)	0.73	5.20	1.73	0.086585* (0.005780)	0.92	14.98	0.84
Mustard	0.07968* (0.01975)	0.62	4.03	0.99	-0.004577 (0.003087)	0.10	-1.48	0.67
Groundnut	0.0156 (0.01119)	0.16	1.39	1.60	-0.004351 (0.003933)	0.06	-1.11	1.10
Linseed	1.2793* (0.2993)	0.63	4.17	1.02	-0.15285* (0.02875)	0.59	-5.32	0.60

Notes: (i) *, ** and *** indicate 1%, 5% and 10% level of significance, respectively.

(ii) The figures in parentheses indicate standard error.

(iii) D-W indicates Durbin-Watson statistic.

TABLE 3. Exponential growth rate of areas and production of pulses, oilseeds, potato, mustard, groundnut and linseed from 1974-75 to 2007-08

Crops	Area				Production			
	Coefficients	R ²	T-Ratio	D-W	Coefficients	R ²	T-Ratio	D-W
Pulses	0.003166 (0.006903)	0.09	0.46	0.24	0.009747 (0.006651)	0.07	1.47	0.25
Oilseeds	0.005127 (0.004673)	0.04	1.10	0.27	0.023926* (0.004009)	0.53	5.97	0.66
Potato	0.042341* (0.003145)	0.85	13.46	0.48	0.056639* (0.004103)	0.86	13.81	0.37
Mustard	0.013380* (0.003744)	0.29	3.57	0.31	0.019397* (0.004176)	0.41	4.64	0.4
Groundnut	0.013819* (0.003710)	0.32	3.72	0.47	0.013969* (0.002873)	0.43	4.86	0.67
Linseed	-0.01275 (0.01827)	0.02	-0.70	0.32	-0.01496 (0.02021)	0.02	-0.74	0.27

Notes: (i) *, ** and ** indicate 1%, 5% and 10% level of significance, respectively.

(ii) The figures in parentheses indicate standard error.

(iii) D-W indicates Durbin-Watson statistic.

Table 1 and Table 2 show that the rate of growth (areas and production) of some crops have declined within the periods, yet Table 3 reveals that the rate of growth of areas and productions of pulses, oilseeds, potato, mustard, and groundnut, have increased over the years 1974/-75 to 2007/08, except linseed. It shows that the rate of growth of areas and productions of potato, mustard, and groundnut has increased significantly in Bangladesh over the years. All the coefficient values were statistically significant at 1% level. This implies that the CDP has positively influenced the growth of areas and production of pulses, potato, mustard, groundnut except linseed. The area and production of linseed have decreased over the years because the farmers have lost their interest to grow linseed. The main reason is that the people do not like edible oil of linseed like other edible oil. Unfortunately, this growth was not enough to meet the nutritional deficiency of the country.

Previous two analyses suggested that decline in pulse area in the CDP periods have reduced its production. Similar conclusions were made for the areas of oilseed. However, the areas for the crops of mustard, groundnut and linseed have declined during both pre-CDP and the CDP

periods. On the other hand, the crop area for the potato has increased during pre-CDP and CDP periods. The main reason for this is that potato is a profitable enterprise rather than other crops. Though the areas have increased in pre-CDP period and post harvest period, production showed positive with area for both the periods. This could be explained by the fact that more has been done for potato compared to other crops in the pre and the CDP periods. The main reason is that the potato is more profitable enterprise compare to other non-food grains crops such as pulses, oilseeds, mustard, groundnut and linseed.

From Figure 1 and Figure 2 it can be concluded that at the beginning of the crop diversification program, the areas and the production of pulses, oilseeds, potato, mustard, groundnut and linseed have rapidly increased while during the period the areas of the pulses, oilseeds decreased gradually, and consequently the production of pulses, oilseeds and mustard decreased at the same time.

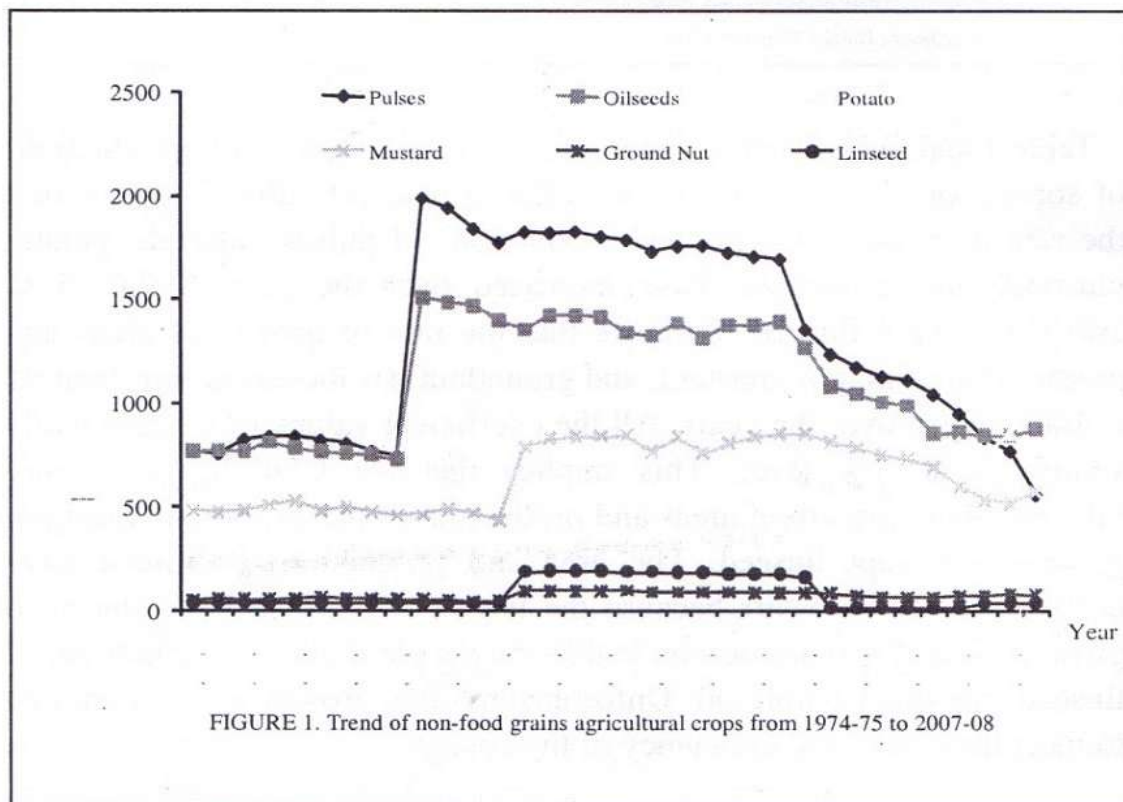
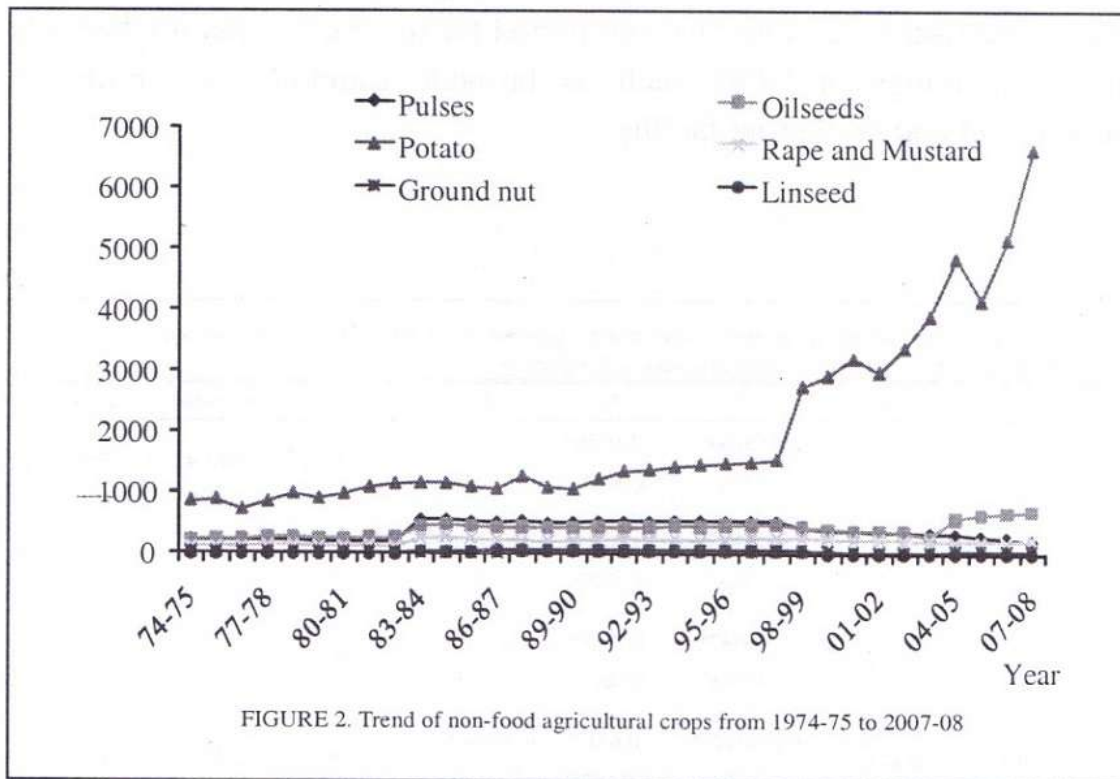


FIGURE 1. Trend of non-food grains agricultural crops from 1974-75 to 2007-08



Stability Test of Growth Rate of Area and Production

The stability test of the growth rates between the sub-period 1974-75 to 1985/86 and 1986/87 to 2007/08 are presented in Table 4. It appears from the table that for the growth rate of mustard, and linseed areas, the differential intercept and slope coefficients are insignificant. This indicates that there are no significant differences between the growth of areas in the two sub-periods. But in case of pulses, oilseeds, potato and linseed, both differentials intercept and slope coefficients are statistically significant at 1% level of significance. Thus one may accept the hypothesis that there was definitely a shift in the level of growth rates of areas under the crop pulses, oilseeds, potato and linseed. Since the slopes of the dummies were negative for the areas pulses, oilseeds, potato and linseed and statistically significant at 1% level, the growth performance was better in 1974/75 to 1985/86 than in the period 1986/87-2007/08. On the other hand, the slope dummy of the area of potato is positive and it was statistically significant at 1% level, which indicates the growth performance was better in CDP period than pre-CDP period. It may,

therefore, be concluded that there were significant differences in the growth performance in the two sub period for these crops mainly because of the activities of NGO such as farmers' training, availability of microcredit and marketing facility.

TABLE 4. Testing the stability of the growth rates of areas between the period 1974-75 to 1985-86 and the period 1986-87 to 2007-08 among the regions of Bangladesh

Crops	Constant	T	D	DT	R ²	F-Value	D-W
Pulses	8.341	-0.048136* (-7.01)	-1.9759* (-9.44)	0.12997* (7.05)	0.75	1087.47	0.97
Oilseeds	7.7301	-0.028557* (-5.82)	-1.3133* (-8.79)	0.08829* (6.71)	0.73	818.27	1
Potato	4.6135	0.063347* (14.88)	0.7361* (5.68)	-0.03975* (-3.48)	0.93	50.33	1.05
Mustard	6.8326	-0.010372** (-2.05)	-0.6247* (-0.1837)	0.00662 (0.49)	0.69	20.58	1.23
Groundnut	4.5759	-0.008304 (-1.59)	-0.5572* (-3.51)	0.00162 (0.12)	0.65	10.606	1.25
Linseed	7.2077	-0.13093* (-5.06)	-3.6018* (-4.57)	0.12405** (1.79)	0.50	21.49	0.85

Notes: (i) *, ** and ** indicate 1%, 5% and 10% level of significance respectively.

(ii) The figures in parentheses t-statistics.

(iii) D-W indicates Durbin-Watson statistic.

TABLE 5. Testing the stability of the growth rates of production between the period 1974-75 to 1985-86 and the period 1986-87 to 2007-08 among the regions of Bangladesh

Crops	Constant	T	D	DT	R ²	F-Value	D-W
Pulses	6.948	-0.039 (-5.47)	-1.8473* (-8.51)	0.11787* (6.16)	0.72	1402.24	0.91
Oilseeds	5.903	0.009658 (1.42)	-0.6628 (-3.21)*	0.05706* (3.14)	0.66	55.58	0.9
Potato	5.636	0.086585* (17.37)	1.0165* (6.69)	-0.05061* (-3.79)	0.95	49.90	1.06
Mustard	5.522	-0.004577 (-0.88)	-1.0508* (-6.60)	0.08426* (6.01)	0.76	128.98	0.95
Groundnut	3.772	-0.004351 (-1.05)	-0.5622* (-4.47)	0.01995*** (1.80)	0.84	35.30	1.52
Linseed	6.443	-0.15285* (-6.04)	-5.1638* (-6.70)	0.32221* (4.75)	0.61	1305.49	0.72

Notes: (i) *, ** and *** indicate 1%, 5% and 10% level of significance respectively.
(ii) The figures in parentheses t-statistics.
(iii) D-W indicates Durbin-Watson statistic.

Table 5 shows the results of stability test of the growth rates of production of pulses, oilseeds, potato, mustard, groundnut and linseed between the sub-period 1974/75 to 1985/86 and the period 1986/87 to 2007/08. Table 5 further shows that the slope coefficients for the production of mustard, and groundnut crops are insignificant but the differential intercept were statistically significant at 1% level. This indicates that there were no significant differences between the growth rates of mustard, and groundnut production in the two sub-periods. In case of potato, the differential intercept is statistically significant but the slope was negative and it was at 1% level of significance. So it may be concluded that the growth performance of the pre crop diversification period was better than the crop diversification period. But in case of pulses, oilseeds and linseeds both the differential intercept and slope coefficients were statistically significant at 1% level. These indicate that there were structural break in the level of the growth rate of production of pulses, oilseeds and linseeds between the period 1974/75 to 1985/86 and the period 1986/87 to 2007/08. It is interesting to see from the table 5

that the production performance of pulses, oilseeds, mustard, groundnut and linseed (negative slope of dummies) for the period 1974/75 to 1982/83 was better than that of the crop diversification period. But the growth performance of potato was better in crop diversification period (CDP). In case of mustard, the differential intercept is significant at 1% level but the differential slope is insignificant. Thus one may conclude that the structural break has occurred at the level of production between the two periods but the growth performance is same in both the periods for this product.

Conclusions and Recommendations

The production of agricultural crops can be increased either through expansion of cropped land or improvements in productivity of the cropped land. In the context of Bangladesh there is little scope for expansion of net cultivated area to increase production. Productivity improvements can increase the total production of agricultural crops. There are numerous physical, technological, economic and institutional constraints on increasing area and per acres yield rates of potato, oilseeds and pulses. Lack of high yielding varieties suitable for the soil condition, lack of institutional credit facilities, unattractive prices, and lack of institutional mechanism for integrating production, processing and marketing of potato, oilseeds and pulses are some of the major factors responsible for the stagnation of the potato, oilseeds and pulses economy. In the period 1985/86, the CDP started activities extensively and at that time CDP crops like potato, oilseeds and pulses brought a break-through in the cereal crops. Before CDP, crops like potato, oilseeds and pulses occupied an insignificant place in the cropping pattern. Consequently in the pre-CDP period, the growth rate of cropped areas for potato, oilseeds and pulses, and their production were lower than that of the CDP period. While the CDP started in 1985/86, the cropped areas and its production jumped suddenly due to the NGO's encouragement activities such as farmers' training, availability of microcredit, and marketing facilities. Therefore, at the beginning, the cultivators were encouraged to expand the cropped land. But during the CDP period, these cropped areas reduced gradually in the absence of CDP activities. Therefore, the policy makers should look for alternative policies for removing the shortage of these crops.

AUTHOR NOTES

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APPENDIX A. Areas ('000 acres) of pulses, oilseeds, potato, mustard, groundnut and linseed from 1974/75 to 2007/08

Year	Pulses	Oilseeds	Potato	Mustard	Ground Nut	Linseed
1974-75	765	764	232	485	48	35
75-76	755	769	237	477	55	35
76-77	823	765	191	480	52	36
77-78	835	808	222	509	52	36
78-79	838	779	239	526	58	36
79-80	819	768	238	482	62	36
80-81	804	760	252	498	57	37
81-82	766	749	262	477	59	37
82-83	742	726	272	461	54	36
83-84	1985	1503	272	464	52	36
84-85	1938	1478	275	490	50	31
85-86	1837	1462	268	471	43	32
86-87	1770	1393	263	436	46	34
87-88	1822	1351	305	785	95	186
88-89	1817	1415	275	825	94	189
89-90	1823	1418	288	836	95	190
90-91	1799	1407	306	838	95	191
91-92	1783	1334	311	840	96	186
92-93	1726	1319	320	763	88	185
93-94	1752	1381	324	832	88	184
94-95	1755	1307	325	760	88	181
95-96	1721	1370	327	803	88	174
96-97	1702	1368	331	831	86	173
97-98	1690	1386	337	849	86	173
98-99	1351	1264	605	850	86	159
99-00	1231	1078	601	812	84	11
2000-01	1170	1040	615	785	72	11
01-02	1126	1001	587	749	64	11
02-03	1108	988	606	735	66	11
03-04	1040	850	669	690	64	11
04-05	947	860	806	597	71	12
05-06	833	845	744	536	73	34
06-07	769	841	853	520	81	35
07-08	558	874	993	577	77	31

APPENDIX B. Production ('000 metric ton) of pulses, oilseeds, potato, mustard, groundnut and linseed from 1974/75 to 2007/08

Year	Pulses	Oilseeds	Potato	Mustard	Ground nut	Linseed
1974-75	224	224	866	114	26	6
75-76	220	238	889	110	31	7
76-78	230	235	724	112	23	7
77-78	238	264	849	132	27	7
78-79	226	265	985	135	28	7
79-80	214	246	903	116	26	7
80-81	211	250	983	122	25	7
81-82	205	255	1095	123	24	8
82-83	203	253	1149	122	23	8
83-84	551	468	1166	254	33	41
84-85	553	487	1159	285	32	37
85-86	519	469	1102	261	34	37
86-87	510	437	1069	229	34	43
87-88	539	449	1276	222	48	43
88-89	496	434	1089	207	45	47
89-90	512	438	1066	217	41	48
90-91	523	448	1237	228	41	55
91-92	519	440	1366	243	42	50
92-93	517	449	1384	218	39	49
93-94	530	472	1438	239	41	48
94-95	534	453	1468	219	40	49
95-96	523	471	1492	246	40	46
96-97	525	478	1508	249	40	50
97-98	519	483	1553	254	40	50
98-99	417	448	2762	253	39	46
99-00	384	406	2933	249	42	3
2000-01	366	385	3216	238	32	3
01-02	344	376	2994	233	30	3
02-03	349	368	3386	218	34	2
03-04	333	270	3908	210	34	3
04-05	316	587	4856	191	39	3
05-06	279	657	4161	183	38	8
06-07	258	684	5167	189	46	8
07-08	204	701	6648	228	44	8

Inflation in a Small Open Economy: A Case Study of Sweden

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ABSTRACT

The paper attempts to identify the leading sources of inflation and their switching behavior following a change in the exchange rate regime in a small open economy like Sweden. Before regime changes the leading sources of inflation were real GDP, exchange rate, money supply and the foreign price respectively. In this period, the foreign impact-via devaluation and foreign price expressed in foreign currency-on domestic inflation was positive. After the regime changes, the sources are exchange rate, import prices, money supply and real GDP respectively. In this period, the foreign impact-via depreciation and foreign price expressed in foreign currency-on domestic inflation is negative. ECM has been used in the empirical study.

Keywords: inflation, exchange rate, ECM, cointegration, import prices

Introduction

Inflation is a major focus of economic policy and is regarded as one of the most important macroeconomic indicators. In fact, there is no single theory that can completely describe the inflation process (Hendry, 2001). Theories suggest many sources of inflation. Inflation might arise basically from three sources: excess demand for goods and services, excess money supply with respect to productive potential and imported inflation through foreign price and exchange rate (Surrey, 1989).

The paper attempts to identify the leading sources of inflation and their switching behavior following a change in the exchange rate regime in a small open economy like Sweden. Sweden had a fixed exchange rate

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regime before 1992-4. After that, it had adopted a flexible exchange rate with a statutory inflation target at about 2%. Thus, it is interesting to see the impact of fixed exchange rate regime and floating exchange rate regime on domestic price level. The foreign impact on Swedish inflation level might perform through two channels: exchange rate and international price level. Therefore, it would be also interesting to see that by which channel the foreign force affects the Swedish inflation. Error correction mechanism (ECM) has been used in the empirical study.

The impact of regime changes on Swedish economy can be observed by using the data for the period of 1975 -2005 (OECD database) and dividing them into two sub periods; the first sub period covers before 1992-4 and other sub period is the period after 1992-4.

The estimation results show that before adopting the flexible exchange rate, the foreign impact through devaluation and foreign price expressed in foreign currency on domestic inflation was positive. The study shows that devaluation had affected the domestic inflation positively while a change in foreign price in foreign currency had affected it negatively. As the relative strength of the devaluation was higher than that of the foreign price, the impact of foreign force on domestic inflation level was positive. However, import price pass-through to domestic price level was negative. This is somewhat a strange result. Because if the international price level increases, the domestic price level of a relatively open economy, with high import shares, might be increased. However, this is not a strong source of inflation in Sweden as it has the weakest predictive power.

However, after adopting the floating exchange rate, the foreign impact-via depreciation and foreign price expressed in foreign currency on domestic inflation is negative. The estimation results show that exchange rate pass-through is negative while foreign price pass-through is positive. As the relative strength of exchange rate pass-through is higher than that of foreign price pass-through, foreign impact on domestic inflation level is negative.

The study also shows that the leading sources of inflation in Sweden, before regime changes, were real GDP, exchange rate, money supply and the foreign price respectively. However, after regime changes, the leading sources of inflation in Sweden are the exchange rate, import prices, money supply and real GDP respectively

The derived short run inflation equation confirms that, before changing the monetary policy, real economic activity, nominal effective exchange rate and monetary growth affect inflation immediately, whereas the import price expressed in foreign price affects inflation after one quarter. However, the derived short run inflation equation confirms that, after adopting the flexible exchange rate, the impact of monetary growth and import price of goods and services expressed in foreign currency takes place immediately while the impact of real economic activity takes place after one quarter. However, in short run it shows no impact of nominal effective exchange rate.

The rest of the paper is organized as follows. Section 2 presents the empirical study with a discussion of results. Section 3 concludes with key findings.

Empirical Study

Theoretical Model

The study has been conducted by adopting the following model used by Bawumia and Otoo (2003):

$$\Delta p_t = \alpha m_t^s + \beta y_t + \delta e_t + \lambda p_t^f \quad (3)$$

where,

Δp_t = Inflation rate in period t,

m_t^s = log of money supply in time t,

y_t = log of GDP in time t,

e_t = Log of exchange rate in time t,

p_t^f = log of import prices of goods and services expressed in foreign currency,

It is expected that m_t^s , p_{t-1} , e_t and p_t^f affect p_t positively while y_t affects p_t negatively. The motivation of using the above equation is explained below.

Firstly, the quantity theory of money states that the central bank can manage the rate of inflation as it has control over money supply. If the central bank increases money supply rapidly, the price level will rise rapidly. If the central bank does not change money supply, the price level might be stable. Thus, there might be a positive relationship between money supply and inflation.

Secondly, money market equilibrium condition is,

$$M_t^s = M_t^d$$

Thus,

$$M_t / P_t = f(y_t, \pi_t^e) \quad (4)$$

In equation (4), for given values of expected inflation (π_t^e) and M_t , a fall in income level reduces the demand for real money balances. This demand is accommodated by a rise in price level to re-establish the equilibrium. Therefore, income level might affect price level negatively.

Thirdly, monetary policy might affect inflation through expected inflation. For example, if monetary authority plans to ease monetary policy then consumers and businessmen might think that it might increase the future price level. Then they might demand higher wages and prices, which will eventually bring inflation in the future (FRB, Sanfransisco, 2006). However, if we take many lags in the long run, then both inflation (Δp_t) and lagged inflation (Δp_{t-1}) would have the same time series data. Thus in the long run, both inflation and lagged inflation would be the same.

Finally, if exchange rate depreciates or foreign price level increases, then domestic price level increases. Therefore, it is expected that money supply, exchange rate and foreign price level affect price level positively while income level affects it negatively. Thus, in the long run, the error correction for inflation (Δp_t) would be:

$$\Delta p_t = f(m_t^s, y_t, e_t, p_t^f) \quad (5)$$

and ad hoc specified error-correction mechanism is :

$$\Delta p_t = \alpha m_t^s + \beta y_t + \delta e_t + \lambda p_t^f \quad (6)$$

Thus it is interesting to see how those factors affect the domestic price level of a small open economy. An error correction model will be used to find those effects.

Econometric Model

Time series data in economics are usually non-stationary. In time series analysis it is generally assumed that time series data are stationary. One can convert non-stationary data to stationary by taking sufficient differences. However, in that case the long run information might be lost. One way of avoiding losing the long run information is cointegration. If economic variables are in the same order, cointegration set can be made (Engle & Granger, 1987). If z_t is I(1) and if x_t is I(1), there is a h such that $z_t - h x_t = I(0)$. More generally, x_t is a p dimensional column vector of exogenous I (1) variables and z_t is described by the following Autoregressive Distributive Lag, ADL (k) process:

$$z_t = \alpha_1 z_{t-1} + \dots + \alpha_k z_{t-k} + \beta_0' x_t + \dots + \beta_k' x_{t-k} + \phi' D_t + \varepsilon_t, \quad (7)$$

where parameters are p dimensional column vectors and D_t collects the deterministic terms. Then the corresponding error correction model is,

$$\Delta z_t = \sum_{i=1}^{k-1} \zeta_i \Delta z_{t-i} + \sum_{i=0}^{k-1} \gamma_i' \Delta x - \alpha(z_{t-1} - h' x_{t-1}) + \phi' D_t + \varepsilon_t, \quad (8)$$

where

$$\zeta_i = -\sum_{j=i+1}^k \alpha_j, \gamma_0 = \beta_0, \gamma_i = -\sum_{j=i+1}^k \beta_j \quad (i = 1, \dots, k-1), \alpha = 1 - \sum_{i=1}^k \alpha_i, \\ h = (1/\alpha) \sum_{i=0}^k \beta_i,$$

and, $\sum_{i=1}^{k-1} \zeta_i \Delta z_{t-i} + \sum_{i=0}^{k-1} \gamma_i' \Delta x$ is the short-run dynamics, D_t represents seasonal dummies, $\alpha(z_{t-1} - h' x_{t-1})$ is the error correction term

which provides us static long run solution, given that the error correction model is stationary.

If the error correction model is $I(0)$, then variables can be cointegrated and we can formulate the error correction model. In that case, regression analysis will be meaningful, and there will be no spurious regression and long run information will be retained. Let, $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$, Firstly, equation (6) will be regressed by equation (7) and, then, it will be regressed by error correction model (8)

Data Set

To estimate inflation equation, the quarterly data of Sweden, gathered from OECD, have been used. The time period of data is from 1975 Q-1 to 2005 Q-4. The price level is measured as consumer price index (CPI). M3 is used as a measurement of money supply as it captures the entire money supply in the whole economy (Lerner, 2004). It includes M2 plus large-denomination savings deposits and institutional money-market mutual fund. M3, a measure of inflation, gives us an idea about monetary growth and the big money in the institutions (Chapman, 2005). Income (y_t) is measured as GDP in market prices. The exchange rate (e_t) has been measured by the nominal effective exchange rate. It is a composite index of value of the domestic currency. Formally, the nominal effective exchange rate is the exchange rate of the domestic currency in relation to other currencies weighted by their share in the foreign trade of domestic country (OECD). Because of the unavailability of data for foreign prices expressed in foreign currency (p_t^f), Import prices of goods and services, local currency have been used as proxy variable. This proxy variable has been converted into foreign prices by using the nominal effective exchange rate. In this paper five series will be considered, they are, Δp_t = Inflation rate, (i.e. first difference of log of CPI), m_t^s = Log of money supply, y_t = Log of GDP, e_t = Log of nominal effective exchange rate, p_t^f = Log of import prices of good and services expressed in foreign currency(proxy variable).

The Dickey-Fuller (DF) and the Augmented Dickey – Fuller tests (ADF) have been used to test the level of integration. In the ADF test, the null hypothesis states that the time series variable has a unit root, this is, it is not stationary and the alternative hypothesis states that the time

series variable does not have a unit root. However, if ADF rejects the null hypothesis but the beta Y_{-1} is over 0.80, the variable is considered non-stationary. Also graphs and correlogram test play an important role to see the stationary.

In practice, economic variables are (almost) never integrated of higher order than two. Consider a variable x . If the test of Δx reveals that the null hypothesis is not rejected, Δx is said to be integrated of order 1 (or, Δx is $I(1)$). That is, the first difference of Δx is stationary. In other words, the second difference of x is stationary, that is, x is $I(2)$. However, if the test of Δx reveals that the null hypothesis is rejected, we have to find out whether x is $I(1)$ or $I(0)$. For example, if the stationary test of x reveals that null hypothesis is not rejected, x is $I(1)$ that is, the first difference of x is stationary. However, if test of x by ADF reveals that null is rejected then x is $I(0)$. The test of the unit root of each variable shows that all variables including inflation are integrated in the same order, that is, they are $I(1)$ (Table 1). The details of stationary test have been mentioned in the appendix (Table 1 to Table 3)

TABLE 1. The Time Series Property of the Variables²

Variables	Sample (1975-1 to 2005-4)	Sub-sample 1 (1975-1 to 1992-3)	Sub-sample-2 (1993-1 to 2005-4)
Δp_t	I(1)	I(1)	I(1)
y_t	I(1)	I(1)	I(1)
m_t^s	I(1)	I(1)	I(1)
e_t	I(1)	I(1)	I(1)
p_t^f	I(1)	I(1)	I(1)

Thus cointegration set can be built.

² In sample for period 1975-1 to 2005-4, (a) y_t is trend stationary (b) beta Y_{-1} value of p_t^f is close to 1 which reveals that null is not rejected. That is, it is $I(1)$ (see table 1 in the appendix)

In Sub-sample 2, ADF test of m_t^s reveals that it is $I(2)$ (see table 2 in the appendix). But from correlogram test it is clear that it is stationary (see Figure 5 in the appendix). So for practical reason it can be considered as $I(1)$

Results and Discussions

After doing the lag structure analysis by using the PCGive computer software, equation (7) was estimated by OLS where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$. In the lag structure analysis, the null-hypothesis (a model with a lagged term is a sub model of the general model) is tested. If diagnostic checking shows the existence of normality and non-existence of AR and ARCH problem, cointegration can be tested by using the static long run solution. If the error term is I (0), then the system is said to be cointegrated. Thus, cointegration between the variables can be found and, then, error correction model can be formulated. Thus, ECM in equation (8), can be estimated by taking the first difference of all variables. The parsimonious form of the model can be determined by dropping out the variables that appear to be insignificant. At each stage, the diagnostic test has been performed. By this way the parsimonious form of ECM has been achieved.

Analysis for the Period of 1975-1 to 2005-4

From analysis of lag structure, it turns out that 2 lags are needed. The hypothesis testing of insignificant of lag showing that P value for lag 3 is 0.5581. The remaining lags are significant. The lag structure analysis does not always give the correct answer. It is an F-test, which sometimes goes wrong. In this case, it concluded the third lag is not needed, when in fact it is needed. It can help in determining the number of lags, but sometimes it gives the inappropriate answer. This we found out by getting the misleading information in case of money supply. Regressing the ADL (k=3) (equation 7) by OLS, where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$, yields no problem of AR, and ARCH and normality has also been accepted (see table 5, model 7 in the Appendix). Dummy variable for the period 1992-4 has been used as D. The static long run solution is,

$$\Delta p_t = -0.619 + 0.021y_t + 0.004m_t^s + 0.062e_t + 0.006p_t^f - 0.0003T$$

(1.19) (0.09) (1.22) (0.23) (0.944)

Where Δp_t = Inflation rate in period t, y_t = log of GDP in time t, m_t^s = log of money supply in time t, e_t = Log of exchange rate in time t,

p_t^f = log import prices of goods and services expressed in foreign currency and T = trend variable. Here, significance level is less informative as variables are I(1).

As the error correction term in equation (8) is found trend- stationary (See Appendix, table 4, Fig 6), error correction model can be built as there is a valid cointegration relationship. By taking the first difference of all variables in equation (8), where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$:

$$\begin{aligned} \Delta^2 p_t = & -0.011 - 0.524 \Delta^2 p_{t-1} - 0.239 \Delta^2 p_{t-2} + 0.22 \Delta y_t + 0.10 \Delta y_{t-1} + 0.026 \Delta y_{t-2} + 0.015 \Delta m_t^s + \\ & \quad \quad \quad (6.15) \quad \quad \quad (2.69) \quad \quad \quad (4.53) \quad \quad \quad (1.97) \quad \quad \quad (0.49) \quad \quad \quad (0.60) \\ & + 0.07 \Delta m_{t-1}^s - 0.025 \Delta m_{t-2}^s + 0.12 \Delta e_t - 0.05 \Delta e_{t-1} + 0.15 \Delta e_{t-2} + 0.093 \Delta p_t^f + 0.002 \Delta p_{t-1}^f \\ & \quad \quad \quad (2.77) \quad \quad \quad (1.00) \quad \quad \quad (2.64) \quad \quad \quad (1.21) \quad \quad \quad (3.36) \quad \quad \quad (3.62) \quad \quad \quad (0.11) \\ & + 0.05 \Delta p_{t-2}^f - 0.21 e c m_{t-1} + 0.014 D \\ & \quad \quad \quad (1.99) \quad \quad \quad (4.18) \end{aligned}$$

AR=0.14 ARCH=0.73 Chi square Normality= 0.24

In this model, there is no AR, ARCH problem and normality is also accepted. The above equation can be reduced by imposing zero restrictions on variables that appear to be insignificant:

$$\begin{aligned} \Delta^2 p_t = & -0.010 - 0.53 \Delta^2 p_{t-1} - 0.24 \Delta^2 p_{t-2} + 0.23 \Delta y_t + 0.09 \Delta y_{t-1} + 0.06 \Delta m_{t-1}^s - 0.02 \Delta m_{t-2}^s \\ & \quad \quad \quad (6.5) \quad \quad \quad (3.16) \quad \quad \quad (4.86) \quad \quad \quad (2.04) \quad \quad \quad (2.77) \quad \quad \quad (0.95) \\ & + 0.13 \Delta e_t - 0.06 \Delta e_{t-1} + 0.16 \Delta e_{t-2} + 0.09 \Delta p_t^f + 0.05 \Delta p_{t-2}^f - 0.19 e c m_{t-1} + 0.14 D \\ & \quad \quad \quad (2.74) \quad \quad \quad (2.47) \quad \quad \quad (3.62) \quad \quad \quad (3.85) \quad \quad \quad (2.19) \quad \quad \quad (4.84) \end{aligned}$$

From the test of model reduction, it is clear that the null hypothesis (equation (i+1) is a sub model of equation (i)) is not rejected. So, the reduced model is a sub model of the original model.

Thus, from the estimated model it can be said that short run changes in GDP, money supply, lagged inflation, exchange rate and import prices have significant effect on inflation. These results show that short run changes in variables on the right hand side have significant effect on the inflation rate and that about 0.19 of the discrepancy between the actual and the long-run, or equilibrium, the value of inflation is eliminated or corrected each quarter.

However, there was chaos in the Swedish economy at the end of 1992, especially in 1992-4. The Swedish Krona was pegged at fixed foreign

exchange rate before 1992-4. A floating exchange rate was adopted on 19 November 1992 and the Krona depreciated by 20%. The market interest rate also fell. Monetary policy also changed with the floating exchange rate. In 1993, the Riksbank defined its monetary policy objective and introduced an inflation targeting regime. Its objective is to maintain a stable price level – maintaining the inflation rate with the tolerance of more or less than 1%. (Svante Öberg, 2006). Thus, we may observe the impact of the policy change on Swedish economy by dividing the periods into two sub periods; one is before 1992-4 and the other is after 1992-4.

Analysis for the Period of 1975-1 to 1992-3

All the variables are I (1) (Table 1). Lag structure analysis does not give any indication that how many lags would be necessary. Thus, we started the test by taking 3, 4, 5 lags and in every case they show the same relation between the variables. This is true for both sub-samples.

Regressing the ADL (k=4) (equation 7) by OLS, where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$ yield no problem of AR., ARCH and normality has been accepted (See Appendix, Table 6, model 7). The static long run solution is,

$$\Delta p_t = -2.27 + 0.097 y_t + 0.050 m_t^s + 0.0832 e_t - 0.018 p_t^f - 0.0025 T$$

(0.95) (1.02) (1.21) (0.46) (1.03)

From the above equation, it is clear that all the variables except income level and proxy variable influence inflation level according to the theory. Here, significance level is less informative as variables are I(1).

The error correction term in equation (8) has been found stationary (Table 4 in the appendix). Error correction model can be built, as there is a valid cointegration relationship, by taking the first difference of all variables, and then the equation (8), where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$ is:

$$\begin{aligned} \Delta^2 p_t = & -0.007 - 0.69\Delta^2 p_{t-1} - 0.33\Delta^2 p_{t-2} + 0.065\Delta^2 p_{t-3} + 0.27\Delta y_t + 0.169\Delta y_{t-1} - 0.15\Delta y_{t-2} \\ & - 0.13\Delta y_{t-3} - 0.05\Delta m_t^s + 0.01\Delta m_{t-1}^s + 0.028\Delta m_{t-2}^s - 0.06\Delta m_{t-3}^s + 0.13\Delta e_t + 0.07\Delta e_{t-1} + 0.09\Delta e_{t-2} \\ & + 0.09\Delta e_{t-3} + 0.09\Delta p_t^f + 0.06\Delta p_{t-1}^f - 0.007\Delta p_{t-2}^f + 0.04\Delta p_{t-3}^f - 0.03\Delta cm_{t-1} \\ & \text{(1.58) (1.13) (0.208) (0.57) (1.45) (1.64) (0.78) (0.99) (1.06) (2.10) (1.37) (0.14) (0.92) (1.06)} \end{aligned}$$

AR=0.49 ARCH=0.65 Chi square Normality= 0.45

In this model, there is no AR, ARCH problem and Normality is also accepted. The above equation can be reduced by imposing zero restrictions on variables that appear to be insignificant. The reduced model is,

$$\begin{aligned} \Delta^2 p_t = & -0.008 - 0.69\Delta^2 p_{t-1} - 0.34\Delta^2 p_{t-2} + 0.25\Delta y_t + 0.19\Delta y_{t-1} - 0.88\Delta y_{t-2} - 0.09\Delta y_{t-3} \\ & - 0.66\Delta m_t^s - 0.036\Delta m_{t-3}^s + 0.14\Delta e_t - 0.05\Delta e_{t-3} + 0.09\Delta p_{t-1}^f + 0.02\Delta p_{t-1}^f - 0.36\Delta cm_{t-1} \\ & \text{(1.70) (1.47) (1.87) (1.08) (2.38) (1.25) (1.40) (5.15) (2.64) (3.77) (2.34) (1.09) (1.34)} \end{aligned}$$

The test of model reduction ensures that the reduced model is a sub model of the original model. These results show that short run changes in variables on the right hand side have a significant effect on the inflation rate and that about 0.36 of the discrepancy between the actual and the long run, or equilibrium, the value of inflation is eliminated or corrected each quarter. Finally, see the results for period 1993-1 to 2005-4.

Analysis for the Period of 1993-1 to 2005-4

All the variables are I (1) as in table 1. Regression of model (7), where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$, by taking 3 lags, shows that there is no AR problem and normality has also been accepted (Table 7, model 7 in the appendix).

The following static long run solution has been found:

$$\Delta p_t = 1.07 + 0.0187 y_t + 0.07 m_t^s - 0.26 e_t + 0.17 p_t^f - 0.001 T$$

(0.48) (2.47) (0.75) (0.77) (2.15)

From the above equation, it is clear that all the variables except exchange rate and income level influence inflation level according to the theory. Here, significance level is less informative as variables are I (1).

The error correction term in equation (8) has been found stationary (Table 4 in the appendix). Error correction model can be built, as there is a valid cointegration relationship, by taking the first difference of all variables, and then equation (8), where $z_t = \Delta p_t$ and $x_t = (m_t^s, y_t, e_t, p_t^f)$. This model contains no problem of AR, ARCH. Normality has also been accepted:

$$\begin{aligned} \Delta^2 p_t = & 0.32 + 0.21 \Delta^2 p_{t-1} + 0.065 \Delta^2 p_{t-2} - 0.015 \Delta y_t + 0.075 \Delta y_{t-1} - 0.06 \Delta y_{t-2} \\ & + 0.08 \Delta m_t^s - 0.18 \Delta m_{t-1}^s + 0.88 \Delta m_{t-2}^s + 0.02 \Delta e_t - 0.02 \Delta e_{t-1} - 0.014 \Delta e_{t-2} + 0.04 \Delta p_t^f \\ & - 0.05 \Delta p_{t-1}^f + 0.002 \Delta p_{t-2}^f - 1.30 e c m_{t-1} \end{aligned}$$

(1.93) (2.94) (1.90) (0.55) (0.42) (0.23) (1.41)
(1.32) (0.62) (0.23) (1.12) (1.02)
(1.49) (0.07) (4.89)

AR=0.31 ARCH=0.97 Chi square Normality= 0.11

The reduced model is,

$$\begin{aligned} \Delta^2 p_t = & 0.190 + 0.12 \Delta^2 p_{t-1} + 0.066 \Delta y_{t-1} - 0.068 \Delta y_{t-2} + 0.84 \Delta m_t^s - 0.17 \Delta m_{t-1}^s + 0.07 \Delta m_{t-2}^s \\ & + 0.02 \Delta p_t^f - 0.02 \Delta p_{t-1}^f - 1.16 e c m_{t-1} \end{aligned}$$

(1.36) (1.31) (1.46) (2.29) (3.75) (2.12)
(2.32) (2.29) (6.16)

The test of model reduction shows that the reduced model is a sub model of the original model.

The results show that the short run changes in variables on the right hand side have significant effect on the inflation rate and that about 1.16 of the discrepancy between the actual and the long-run value of inflation is eliminated or corrected each quarter.

By using the error correction mechanism for estimating the leading sources of inflation in Sweden and to see the impact of regime change, a static long run equilibrium relationship have been found between inflation, money supply, real GDP, exchange rate and import price for each sample period. This is consistent with other studies (Bawmia and Otoo, 2003; Zavkiev, 2005; Brower and Ericsson, 1995) where ECM is used to estimate the inflation process for different countries. Those studies contain different variables but a long run equilibrium solution has been found in each case.

The derived short run inflation equation, for the period of 1975-1 to 2005-4, confirms that the impact of real economic activity, depreciation and price of imported goods and services on inflation take place immediately while the impact of money supply takes place after one quarter. The derived static long run solution (1975-1 to 2005-4) show that there is an equilibrium long run relationship between the money supply, the exchange rate, the real economic activity and the import prices of goods and services. According to theory, the results reveal that inflation in Sweden is positively related to money supply, exchange rate, and import prices of goods and services.

The estimation results show that during the fixed exchange rate regime, the foreign impact –via devaluation and the foreign price expressed in foreign currency-on domestic price inflation was positive. The exchange rate had a positive impact while the foreign price had a negative impact on domestic price level. As the relative strength of the exchange rate was stronger than that of the international price, the foreign impact on Swedish inflation was positive.

However, after adopting the floating exchange rate, the foreign impact on Swedish inflation level is negative. The study shows that exchange rate pass-through is negative while foreign price pass-through is positive. As the relative strength of exchange rate pass-through is higher than that of foreign price pass-through on domestic inflation level, the foreign impact on domestic inflation is negative. However, McCarthy (2000) analyzes the impact of exchange rate and import prices on domestic PPI and on CPI in selected industrialized countries like United States, Japan, Germany, France, United Kingdom, Belgium, Netherlands, Sweden, and Switzerland. He finds that exchange rate has a moderate impact on domestic price inflation, but import price has a stronger effect on inflation.

It has been mentioned earlier that exchange rate pass-through is negative after adopting flexible exchange rate policy. The interference of the central bank via interest rate to maintain a low inflation rate might be an explanation for this. The study of Gagnon and Ihrig (2004) finds that exchange rate pass through to domestic price level generally declined in many countries including Sweden since the 1990s. They argue that the role of central bank plays an important role in this case as the central

bank intended to maintain a low inflation level or tight monetary policy from the 1990s.

The study also confirms that the price of imported goods and services plays an important role to determine the domestic price level as the import price has the second highest predictive power for explaining the inflation in Sweden. Thus if the import price is lower, domestic price level will be lower. This is consistent with the report of Riksbank (2005). It reports that low imported inflation is one of the causes for a low inflation regime in Sweden.

The estimating results indicate the leading indicators for inflation in Sweden. However, before the change in the exchange rate policy, real GDP was the strongest indicator of inflation in Sweden. Exchange rate, money supply and import price were the second, third and fourth strongest indicator respectively. After change in policy, the long run exchange rate elasticity of prices is 0.26 which shows that exchange rate has the highest predictive power of inflation in Sweden. The import price elasticity of prices is the second highest among all explanatory variables (0.17). Money supply and real GDP have some predictive power on inflation. Thus, the results contradict with the findings of Baumgartner, Ramaswamy and Zettergren (1997). They find narrow money is the strongest indicator and broad money is a stronger indicator of inflation in Sweden. They also find that exchange rate has no predictive power for inflation in Sweden. However, the result shows that the exchange rate is one of the important indicators of inflation in Sweden.

However, the study shows that inflation is positively related to real economic activity, for the whole sample and for two sub-sample also, which violets the theory. This is consistent with the inflation report of Riksbank (2005, 1). It reports that lower GDP is one of the domestic factors for lower inflation in Sweden. The output gap (Actual GDP-Potential GDP) in Swedish economy might be negative which put the downward pressure on inflation. Thus, it reveals that there is a positive relationship between inflation and GDP. Thus, the output gap might have an explanatory power for the lower inflation in Sweden. However, the study did not measure the marginal cost based NKPC or the output gap

based NKPC like Holmberg (2006), Gali and Gertler (1999) to get a comparative result. They find that marginal cost based NKPC has better explanatory power to explain the inflation in Sweden.

Conclusions

The estimation in this study suggests that after adopting the flexible exchange rate policy, the foreign impact on Swedish inflation is negative as the impact of negative exchange rate pass through is stronger than that of positive import price pass-through. Before policy change, the result was just opposite, as the impact of positive exchange rate pass through was stronger than that of negative import price pass-through. Exchange rate pass-through in Sweden is negative; import price pass-through is positive. Moreover, because of stronger negative exchange rate pass-through, the foreign impact on Swedish inflation is negative. Before policy change, inflation was positively affected by the exchange rate and negatively affected by the foreign price expressed in foreign currency. As the effect of devaluation was stronger than that of the foreign price, the foreign impact on Swedish inflation was positive.

The study also suggests that after regime changes, the exchange rate is the strongest leading source of inflation in Sweden, the import price contains the second highest predictive information on the targeted measure of inflation in Sweden. Real GDP and money supply have some predictive power. Before policy change, real GDP was the strongest indicator whereas the exchange rate had the second highest predictive power.

However, there are some limitations of the study. The model does not include all variables affecting inflation in Sweden. They are interest rates, credit aggregate, implied forward rates, marginal cost, CBI etc. So, the findings may not be conclusive. Nevertheless, it has important policy implications. It gives the signal to policy maker how they should react to the fundamentals of price stability. The growth rate of money supply and the growth of real economic activity are inflationary. The exchange rate pass through is very low and even negative, thus, it is very low inflationary. Import price growth is inflationary. Thus, import from low-

cost countries would be helpful to stabilize the price level. Therefore, monetary authority should consider those fundamentals in their policy making. Further research is needed to investigate the policy impact on Swedish inflation by using the alternative models such as the mark-up model, monetary model or Phillips curve model.

AUTHOR NOTES

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APPENDICES

**TABLE 1. Unit root test of variables, sample period:
1975-1 to 2005-4]**

Variables	D-lag	t-adf	beta Y_1
Δp_t	3	-1.721	0.86308
Δm_t^s	6	-4.921*	-0.33901
m_t^s	6	-2.621	0.98762
Δy_t (with trend)	2	-5.157*	0.02678
y_t	3	-1.194	0.98745
Δe_t	1	-7.410*	0.14082
e_t	1	-2.559	0.94771
Δp_t^f	1	-7.178*	0.14447
p_t^f	0	-2.908*	0.97097

**TABLE 2. Unit root test of variables, sample period:
1975-1 to 1992-3**

Variables	D-lag	t-adf	beta Y_1
Δp_t	5	-2.729	0.49
Δm_t^s	3	-1.949	0.35
Δy_t	1	-4.72**	-0.032
y_t	1	-2.61	0.98
Δe_t	0	-6.2*	0.22
e_t	4	-2.31	0.93
Δp_t^f	0	-6.946**	0.177
p_t^f	0	-6.086	0.95

‘*’ and ‘**’ denote 5% and 1% level of significance respectively.

TABLE 3. Unit root test of variables, sample period: 1993-1 to 2005-4

Variables	D-lag	t-adf	beta Y_1
Δp_t	4	-2.855	0.24
Δm_t^s	5	-4.76	0.96
m_t^s	6	-8.301	0.99
Δy_t	1	-5.46**	-0.35
y_t	2	-0.80	0.99
Δe_t	4	-7.37**	0.20
e_t	1	-2.80	0.76
Δp_t^f	0	-5.76**	0.13
p_t^f	0	-1.036	0.91

TABLE 4. Unit root test ECM

Sample period	Lag	t-adf	Be t a Y_1	Results
1975-1 to 2005-4	5	-4.740**	0.22978	I(0)
1975-1 to 1992-3	5	-4.730**	-0.15	I(0)
1993-1 to 2005-4	5	-4.50**	-1.09	I(0)

TABLE 5. Test Diagnostics

Test	Model (7)
AR	0.26
ARCH	0.37
Chi square Normality	0.13

TABLE 6. Test Diagnostics

Test	Model (7)
AR	0.89
ARCH	0.16
Chi square Normality	0.83

TABLE 7. Test Diagnostics

Test	Model (7)
AR	0.40
ARCH	0.99
Chi square Normality	0.06

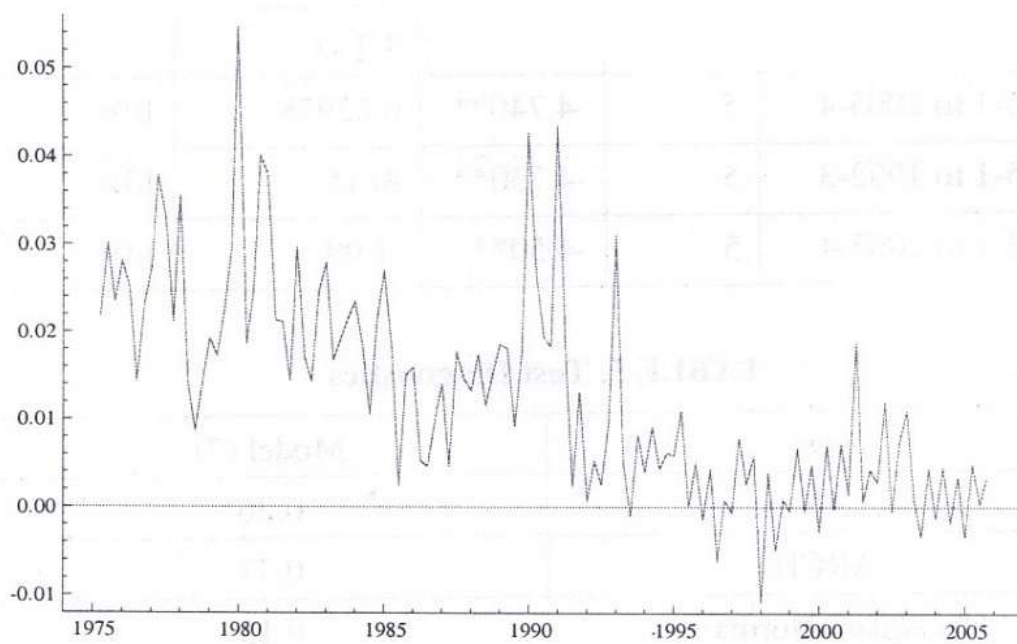
FIGURE 1. Inflation rate in Sweden, 1975-1 to 2005-4

FIGURE 2. First difference of money supply Δm_t^s (upper) and money supply m_t^s (SEK millions) (lower) in Sweden, 1975-1 to 2005-4

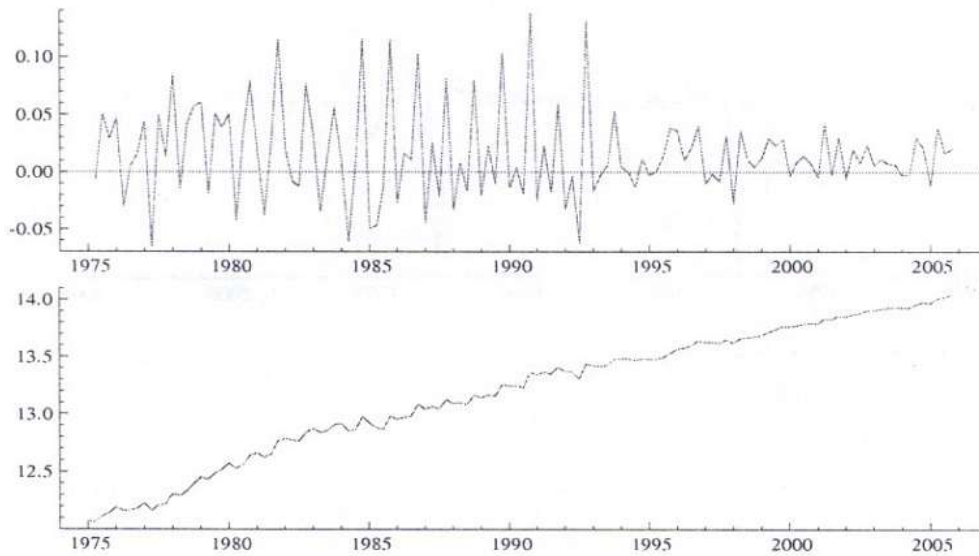


FIGURE 3. First difference of log of GDP (upper) and log of GDP (millions of SEK) (lower) in Sweden, 1975-1 to 2005-4

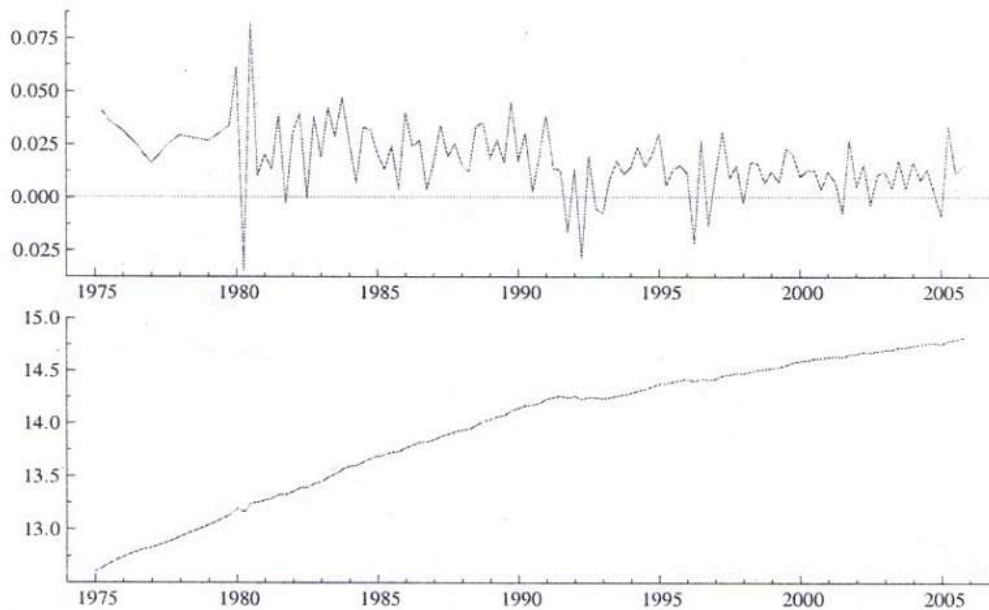


FIGURE 4. First difference of nominal effective exchange rate (upper) and nominal effective exchange rate (SEK/USD) (Lower) in Sweden, 1975-1 to 2005-4

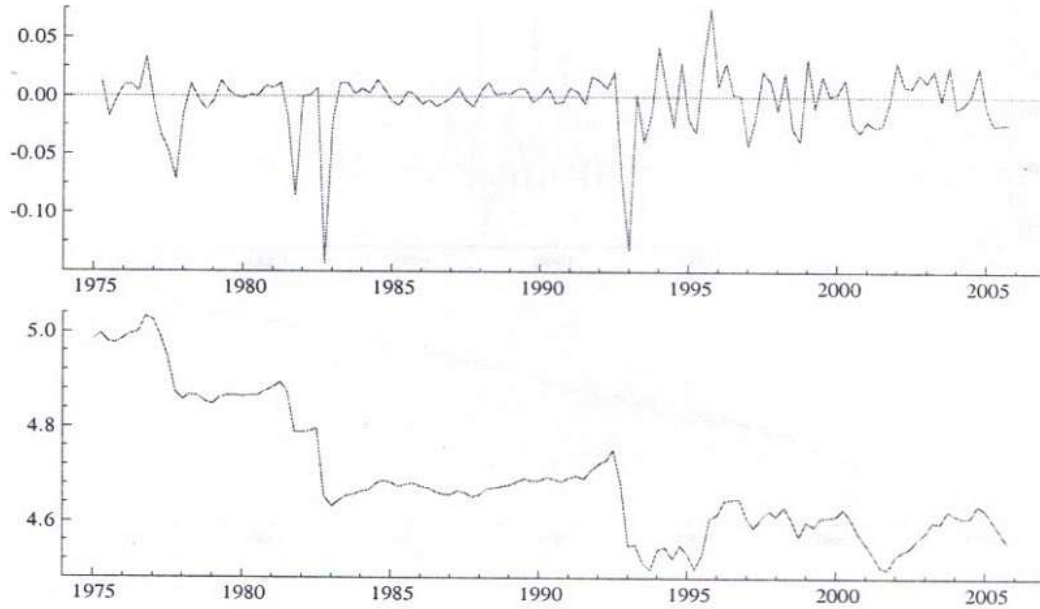


FIGURE 5. First difference of p_t^f (upper) and p_t^f (Millions in USD) (lower) in Sweden, 1975-1 to 2005-4

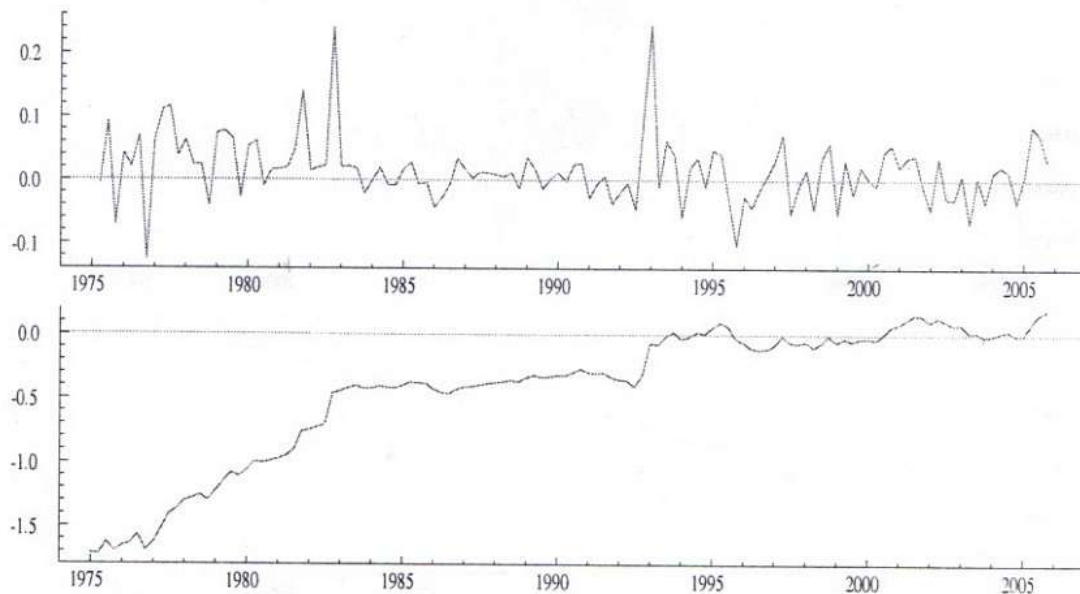


FIGURE 5. Correlogram test of money supply in Sweden from 1975-1 to 1992-3

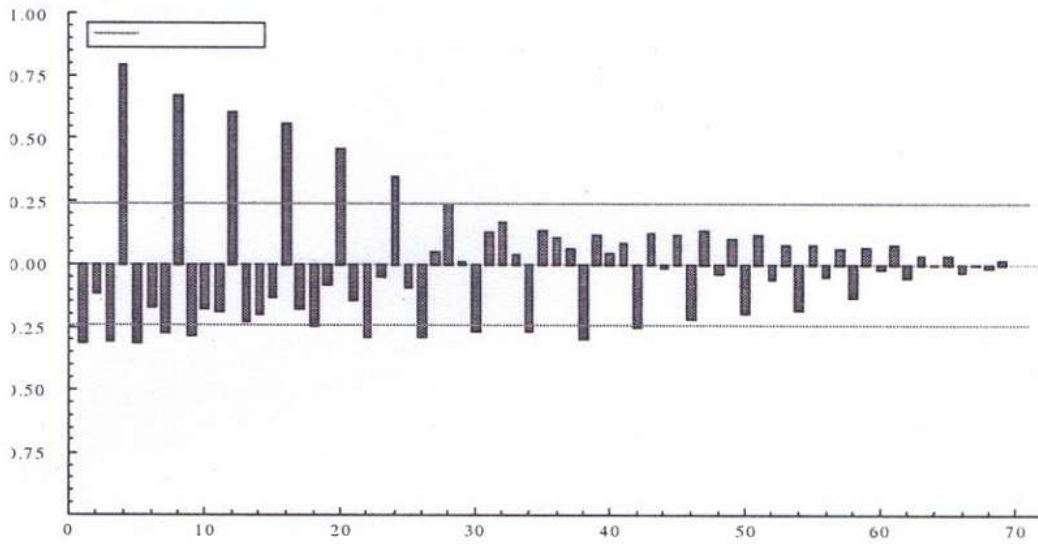
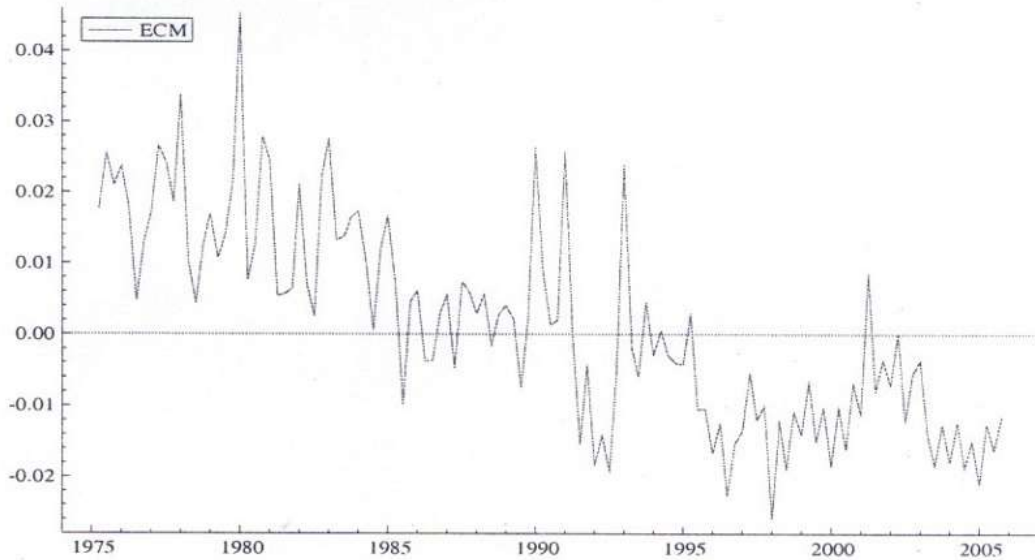


FIGURE 6. Error Correction Model (ECM)



Factors Contributing to Job Stress of Private Bank Employees in Bangladesh

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ABSTRACT

The purpose of the study is to investigate the contributing factors of stress among full time entry level employees of listed banks in Bangladesh. A total number of 29 listed private commercial banks were selected to conduct the research. Survey research design was adopted (n = 172). A factor analysis of job stress reveals five factors: burn out, job pressure, inadequate working hour, anxiety and less time to family. A stepwise multiple regressions demonstrated that burnout, job pressure, inadequate working hour, and anxiety are statistically significant factors which influence job stress at the work place. Findings also indicate that less time for the family has no effect on stress.

Keywords: Job stress, Private bank employees, Factor and Regression Analysis.

Introduction

A rapid expansion of private banks in Bangladesh has taken place from the mid 1990s. The commercial banking system dominates Bangladesh's financial sector. Bangladesh Bank, the central bank of the country, was established as a corporate body by the Bangladesh Bank Order, 1972 (President Order No. 127 of 1972) with effect from 16th December, 1971 and it is the chief regulatory authority in the financial sector. The banking system consists of nationalized commercial banks, private commercial banks, foreign multinational banks and some specialized

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banks. These banks have contributed greatly towards poverty reduction and the empowerment of women in Bangladesh by offering different products such as, entrepreneurship loan and SME (small and medium enterprise) loan. Females are roughly half of the population of Bangladesh. The numerical strength of the female population should point towards the indispensability of utilizing their full potentials for economic growth and development. Experts have befittingly underscored the need for extending all possible supports by the commercial banks and financial institutions in order to promote women entrepreneurship, particularly in small and medium enterprises. More specifically these banks provide aforesaid loans and have different schemes especially for the women. The effects of globalization brought about significant changes in service sector of Bangladesh which has created a good competition among the public, foreign and private banks in Bangladesh. Around the globe, nature of work, working environment, both internal and external, are changing every day. In the context of globalization and intensified competition, organizational employees are driven to perform beyond their routines. Employees are expected to learn the different cultures, languages and rules and regulations of international trade resulting in increased workloads, the pressure to enhance job skills and long working hours (Saleh, Bakar, Keong, 2008). Such changes in the nature of job, different culture, working environment and organizational behavior would undoubtedly increase the occupational stress of the workers, which in turn affects worker's physical and mental health. Study showed that: absenteeism has significant positive correlation with job stress and negative correlation with job satisfaction and mental health (Hoque & Islam, 2002). No matter which profession and which level of organization they are working job stress by nature has become an inevitable issue now-a-days. McGrath (1970) defines stress as a perceived substantial imbalance between demand and response capability, under conditions where failure to meet demand has important perceived consequences. Robbins and Coulter (2006, pp 323) has also defined stress issue in detail. Therefore, this issue has to be addressed properly in order to provide the excellent service to the clients.

This article is divided into four parts: the first part contains a literature review on job stress of different professions; the second part presents the research methodology used in this work; the third part comprises of the results and analysis. In this part the data are analyzed using a factor, and

regression analysis. The final part consists of the conclusions and practical implications of the research.

Literature Review

Job stress has a direct impact on the performance of employees in different levels of profession which is related to employee motivation and performance (Ostroff, 1992). Robbins (2001) defines job stress as a dynamic condition in which the individual is confronted with an opportunity, constraint or demand related to what he or she desires and for which outcome is perceived to be both uncertain and important. Stress can be caused due to organizational, environmental and individual behaviors (Matteson, Ivancevich, 1999; Cook & Hunsaker, 2001). The work, family, personal life and the support network of friends and co-workers has influence on reaction stress and perception to job tension (Omolayo & Bola Mokuolu, 2008). At the workplace women are often subject to under pressure by male counterparts that produce higher level of stress among women (Rubab, Sabnam & Saha, 2008). Organizational-based factors have been known to induce job stress for the employees at workplace (Greenhaus & Bedeian, 1987). These factors are known as organizational stressors since they serve as agents that trigger the various stress reaction. Job stress is also significantly linked to employee absenteeism (Hackett & Guion, 1985) and turnover (Griffeth, Hom, & Gaertner, 2000). Management role of an organization is one of the aspects that affect work-related stress among workers (Alexandros-Stamatios et. al., 2003). Workers in an organization can face occupational stress through the role stress of the management. Role stress means anything about an organizational role that produces adverse consequences for the individual (Kahn and Quinn, 1970). A variety of factors can lead to job stress such as, over work, work schedule, pace of work, job security, route to and from work, and nature of customers or clients. Even noise, including people talking and telephone ringing creates stress. Personal factors also influence stress aspect. Workaholics who feel driven to always be on time and meet deadlines normally place themselves under greater stress than do by others (Kahn and Quinn, 1970).

Job stress has serious consequences for both employer and the

employee (Dessler, 2005). The human consequences include anxiety, depression, anger and various physical consequences such as, cardiovascular disease, headaches etc. For the organization, consequences include reductions in the quantity and quality of performance, increased absenteeism and turnover, and increase grievances and healthcare cost (Dessler, 2005). According to Wilkes et al. (1998) work overloads and time constraints were significant contributors to work stress among community nurses. Workload stress can be defined as reluctance to come to work and a feeling of constant pressure (i.e. no effort is enough) accompanied by the general physiological, psychological, and behavioral stress symptoms. A factor analysis done by Tat-wing, Siu and Paul, (2000) identified six stressors: recognition, perceived organizational practices, factors intrinsic to teaching, financial inadequacy, home/work interface, and new challenge. They also found that recognition, perceived organizational practices, and financial inadequacy were best predictors of job satisfaction, whereas perceived organizational practices and home/work interface were the best predictors of psychological distress. According to Kyriacou and Sutcliffe (1979), inadequate salary, low status of the profession, and excessive paper work are some common sources of distress that affect job satisfaction. Work environments produce stress and reduce job satisfaction (Della and Robert, 1983). The existence of high levels of stress among employees of the banks has received considerable attention in recent years. However, research on work related stress of entry level employees of private banks in Bangladesh is very limited. This led us to conduct a study to identify the factors which are creating stress in their work environment.

Objectives of the Study

The prime objectives of the study are as follows:

- To identify the factors that influence job stress of entry level bank employees;
- To evaluate the contribution of each factor on overall job stress; &
- To suggest some ways to reduce the job stress of the bank employees.

Research Methodology

A detail research work was conducted to achieve the objectives of the study. Secondary data was collected to explore past research work on employees' job stress of different professions. Data were collected through extensive desk research to identify the core issues affecting the research problem. Newspapers, journals, published documents, and research articles and the internet have been identified as the main sources for secondary data collection.

Sampling and Data Collection

A total number of 29 listed private commercial banks in the Dhaka Stock Exchange (DSE) were selected to conduct the study. A list of private commercial banks in Bangladesh has been collected from the Security Exchange Commissions (SEC). The banks, which are situated in Dhaka city, were selected for this study, as all banks' head offices are located in Dhaka city. Among the listed banks' employees who are working in the entry level positions have been taken into account from the respective banks and then they were randomly picked up. A total of 200 questionnaire forms were delivered to respondents of which 172 bank employees gave their instant feedback. The overall response rate is 86 percent. As all the respondents were literate, they were asked to self-administer the questionnaire. The respondents self-administered the questionnaire in which their identities were anonymous. The population of the study comprised of fulltime entry level employees in commercial banks of Bangladesh.

Questionnaire Design and Pre-testing

A structured, closed-ended questionnaire using 5-point Likert Scale with end points ranging from strongly agree (5) to strongly disagree (1) on the factors of job stress was developed for the survey. The respondents were also asked to indicate their sex, age, educational background, monthly income and tenure status. Initially a draft questionnaire was prepared based on secondary research and extensive brainstorming. The questionnaire was developed and tested with a focus group consisting of professionals from the banking sector. The focus group finally verified the factors explaining the job stress. It was pre-tested on a small sample of 55 selected respondents and necessary

correction was made before being finalized. Based on this information the questionnaire was modified and finalized.

Among the factors, two factors such as, pressure of work due to family difficulties and doubtfulness about subordinate's qualification to perform responsibilities are considered less significant. The collected data were tabulated on the computer and the final analysis was performed by using SPSS 11.5 version.

Data Analysis

The aim of this study is to increase the current understanding of the factors that influence employee's job stress in the bank. The data for the study were analyzed by using distinctive and inferential statistical techniques. Frequency distributions were obtained to check for data entry errors such as unrecognized or missing code. Three types of analysis were carried out in this study:

- Cronbach's alpha score was used to demonstrate the internal consistency of the constructs and their reliability
- Factor analysis to group the responses into the hypothesized quality attribute
- Regression analysis to find out if and to what extent the quality attributes explain job stress of the entry level bank employees.

Hypothesis of the Study

The hypotheses of the study are as follows:

H₁: Burn out has a positive effect on job stress

H₂: Job pressure has a positive effect on job stress

H₃: Inadequate working hours has a positive effect on job stress

H₄: Anxiety has a positive effect on job stress

H₅: Less time spent for the family has a positive effect on job stress

Results and Discussions

The average age of the respondents was 26 years. Fifty five percent of the respondents were male. Nine percent respondents belongs to the lowest income level (less than or equal to Bangladeshi Taka 10,000 per month). About thirty four percent of the respondents fell into middle income level (BDT 10,001 to 20,000 per month) while 44 percent fit into the income level of BDT 20,001 to 30,000. The rest fit into the highest income level (over BDT 30,000). Among the survey participants, 45 percent employees' tenure of the job was less than or equal to 3 years, 35 percent fit into 3 to 6 years and the rest of fall under the more than 6 years category. The overall mean and standard deviation was 1.86 and 0.985 respectively.

Results of Factor Analysis

A confirmatory factor analysis was conducted. The factor analysis was conducted using principal axis factoring with varimax rotation as an extraction method (see for details, e.g. Nummenmaa et al., 1996, p. 244; Aczel, 1999, pp. 814-18; Hair et al., 1998, pp. 87-120). The Bartlett's test of sphericity confirmed that the variables within factors are correlated (Table 1). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indicated a practical level of common variance (KMO = 0.665).

Factor analysis of 17 items of job stress was done to check the grouping of responses.

TABLE 1. Factor Analysis of Job Stress (Independent Variable)

	Component				
	1	2	3	4	5
Hurried or rush to complete deadline at work	.881	.177	.149	-.096	.153
Often feel burned out	.881	.180	.408	.221	.031
Feeling fatigue during the workday	.751	.372	-.091	.229	-.083
Feel frustrated on the job	.603	.077	.193	-.059	.372

Get upset in the job more than usual	.545	.311	.435	-.333	.033
Department is understaffed	.336	.846	.062	-.066	-.026
Over extended	.318	.840	.087	-.104	.125
Experience headache frequently while performing the job	-.025	.628	.265	.180	.411
There is too much pressure from the job	.276	.587	.507	.154	.157
There are not enough hours in the workday to complete the work that must be done	.086	.281	.799	-.013	.257
Over-worked in my job	.558	.261	.660	-.010	.026
Unable to meet productivity requirements without overworking	.343	-.249	.653	.267	.305
Blame myself for anything bad that happens on the job	.103	-.131	.074	.891	-.086
Always worried about doing the job well	-.132	-.006	-.144	.740	.350
Sometimes feel more frustrated with my subordinates and peers	.107	.347	.343	.677	-.173
Often work on holidays	.319	.023	.101	.014	.860
Sometimes unable to sleep because of my work pressure	-.074	.377	.396	.007	.735

Factor	Eigenvalues	% of Variance	Cumulative %
1	6.462	38.014	38.014
2	2.217	13.041	51.055
3	1.729	10.169	61.225
4	1.597	9.394	70.619
5	1.032	6.072	76.691

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

A Rotation converged in 10 iterations.

Factor analysis extracted five (5) major factors which influence job stress of the bank's employees. These identified factors represent 76.69 percent of the variance of the variables. Table – 2 shows the items that are included in each factor.

TABLE 2. Grouping of Items in Each Factor

Factor 1	Burn out	I hurry or rush to complete deadline at work I often feel burned out Feeling fatigue during the workday I feel frustrated on the job I get upset in the job more than usual
Factor 2	Job Pressure	Department is understaffed Over extended Experience headache frequently while performing the job There is too much pressure from the job
Factor 3	Inadequate working hour	Not enough hour in the work day Over worked Productivity without overworking
Factor 4	Anxiety	I blame myself for anything bad that happens on the job I am always worried about doing the job well Sometimes I feel more frustrated with my subordinates and peers
Factor 5	Less time for family	I often work on holidays Sometimes I am unable to sleep because of my work pressure

Reliability coefficient (α) indicates that all the factors exceeded or are almost equal to a coefficient value of 0.8 (Nunnally & Bernstein, 1994), except the last factor which is less time spent with family (see appendix). The first factor, burn out consists of five variables ($\alpha = 0.8383$). Peterson (1994) points out that acceptable value of Cronbach's α can vary between 0.5 and 0.95 depending on the type of research. For basic research Cronbach's α should be higher than 0.7-0.8. The second factor, job pressure, consists of four variables ($\alpha = 0.8382$). The third factor, inadequate working hour, contained three variables ($\alpha = 0.7811$). The fourth factor exhibits loadings for three variables referring to anxiety ($\alpha = 0.7618$). The fifth factor refers to less time to family was loaded with two variables ($\alpha = 0.6321$). The overall reliability of the factor analysis was 0.7332. The first factor 'burn-out' explained most of the total variance (38.014 percent).

Findings in Table-3 indicates that the correlation between one scale and another is not as high as each scale's coefficient (α), which provided support for discriminant validity.

TABLE 3. Correlation Matrixes

	V1	V2	V3	V4	V5
V1	.8383				
V2	.5792	.8382			
V3	.6115	.4716	.7811		
V4	.0803	.1488	.2055	.7618	
V5	.3653	.4621	.5251	.0975	.6321

Correlations are significant at $p < 0.05$; figures in diagonal represent coefficient α values.

From descriptive statistics in Table – 4, it can be concluded that stress is present (mean value 3.15) in the banking job of Bangladesh.

TABLE 4. Descriptive Statistics

	Mean	Std. Deviation
Job stress	3.15	1.298
Burn out	3.4560	1.08249
Job pressure	3.6267	1.00251
Inadequate working hour	3.0050	1.08998
Anxiety	2.9800	1.21423
Less time for the family	3.3650	1.14339

According to the responses, it was found that job pressure and burn out are the two most important factors of causing the job stress of the employees. The average responses for less time for the family, inadequate working hour and experience anxiety are 3.36, 3.00 and 2.98 respectively.

Regression Model

The regression analysis was conducted to reveal how different factors affect the job stress of the bank employees. According to the final regression model of job stress, four factors namely, 'burn out', 'job pressure', 'inadequate working hour' and 'anxiety significantly' explain the variability of job stress of the entry level employees of the bank. However, factor five, less time for family, from the explanatory variables was dropped* ($t = -1.406$, $\text{sig} = .163$, $p > 0.05$). The overall F value of this model is 64.677 ($p < 0.000$) which explains 72% of variability in the dependent variable as represented by the adjusted R square value. In a multiple linear regression model, adjusted R square measures the proportion of the variation in the dependent variable accounted for by the explanatory variables. Adjusted R square is generally considered to be a more accurate goodness-of-fit measure than R square. The results of the regression analysis are presented in Table 4.

TABLE 5. Regression Results (significant factors, dependent variable: Job Stress)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.429	.298		-1.440	.153
	Burn out	.497	.089	.414	5.580	.000
	Job pressure	.350	.086	.271	4.062	.000
	Inadequate working hour	.404	.083	.339	4.882	.000
	Anxiety	-.220	.058	-.205	-3.757	.000

a Dependent Variable: Job stress

$R^2 = 0.731$, Adj. $R^2 = 0.720$ $F = 64.677$ ($p < 0.000$)

*Dropped factor- less time for family, Beta -0.091, t -1.406 & Sig 0.163.

Therefore, the final regression model for this study is

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_i$$

or
$$Y = -0.429 + 0.479X_1 + 0.350X_2 + 0.404X_3 - 0.220X_4 + \varepsilon_i$$

The first three factors, such as, 'burn out', 'job pressure' and 'inadequate working hour' have a positive effect on job stress. However, anxiety has a negative effect on job stress. Based on our data analysis, it seems that less time for the family does not affect stress in a significant way. This means that only H_1 , H_2 and H_3 were supported by the result. The rest of the hypotheses were not supported by the analysis.

Conclusions and Recommendations

The primary objective of this study was to study the job stress of entry level bank employees in Dhaka, Bangladesh. It is anticipated that research information provided by the current study will prove useful to banking industry to reducing the stress levels of the entry level employees. With the factor analysis, the overall stress of bank employees in Dhaka City is associated with five factors such as, burnout, job pressure, inadequate working hours, anxiety, and less time spent with the family. The results of the regression analysis conducted on the five factors indicate that burn out, job pressure, inadequate working hours and anxiety were found to be the most influential factors explaining the stress level of the employees. Findings refer to the fact that 'less time spent with the family' has no statistically significant effect on stress. If these stress factors are addressed positively at the work place, overall stress level may be reduced significantly. From a theoretical point of view, the results presented in this study, contributed to the existing literature in a number of ways. First, the article makes a contribution to job stress literature by providing insights on the factors that seem to affect the stress level of the bank employees of Bangladesh. Secondly, the article contributes to the job stress literature by suggesting that burn out, job pressure, inadequate working hour, and anxiety were found to be more influential factors of causing stress. From the managerial point of view, this research can facilitate the policy maker to improve the overall working environment. Organizations might consider some methods to reduce the stress level of the employees, such as, by allowing flexible work hour, motivating employees, using realistic job interviews, improving organizational communications, developing a performance planning program, job redesign, counseling program, and wellness programs. Despite the merits of this study, it has certain limitations that should be recognized. First, the study is based on Dhaka city only. Other metropolitan cities are much different in many aspects. There is wide variation on the banks operating in rural and urban areas. So, factors should be considered to take decision on the overall job stress of the bank employees. Secondly, we examined only 172 randomly selected bank employees. To get more accurate results, one should consider the

total process with a large number of samples. These limitations pave the way to future studies. An interesting avenue for future research could be a detailed study of job stress in both foreign and public banks in Bangladesh. In addition, a comparative study on causes of stress among different professionals can also be executed.

AUTHOR NOTES

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APPENDIX

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.665
Bartlett's Test of Sphericity	Approx. Chi-Square	1248.200
	Df	136
	Sig.	0.000

The Moderating Role of Personality Variables on Role Stressor - Job Satisfaction Relationship

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ABSTRACT

The present study was designed to determine whether need motivation, locus of control and self efficacy influence the relationship between role stressors and job satisfaction relationship. The basic premise is that there will be significant differences in the nature and magnitude of the moderating effect of these variables across the career stages. Results of moderated multiple regression analysis on data gathered from the Indian Administrative Service(IAS), Tamil Nadu Cadre revealed that the nature and the magnitude of the moderating effect varied across early, mid and late career stages.

Keywords: Locus of Control, Self Efficacy, Role Stressors, Job satisfaction

Introduction

Theoretical models of occupational stress processes have well acknowledged the importance of individual differences (Jex, 1998). Personal characteristics such as motivation, self efficacy and those related to control belief explain individual differences. These variables have been implicated as potential buffers of role stressor. The manner in which they impact stressor-strain relations have been reported by a few

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empirical studies (Srivastava, 1985; Jex & Bliese, 2001; Muhonen and Torkelson, 2004; Chiu, Chieh and Ching, 2005). The question of individual differences in relation to the experience and effects of stress and in relation to coping is virtually a defining characteristic of psychological approaches.

Starting with the pioneering work of McClelland (1953), the concept of motivation has gained momentum. Organizational scientist and practitioners have long been interested in employee motivation. This interest derives from the belief and evidence that there are benefits to having a motivated workforce (Locke & Latham, 2002).

Among McClelland's higher order needs, the need for achievement has been given more attention by many researchers and is found to buffer the undesirable effects of role stress on job satisfaction and other job related outcomes (Johnson & Stinson, 1975; Steers & Spencer, 1977; Morris & Synder, 1979; Sehgal 1985).

The construct of self-efficacy as a moderator variable has also received considerable empirical attention in the occupational stress literature (Gist and Mitchell, 1992). Research conducted has failed to provide convincing support for the moderating effects of self-efficacy alone. It was proposed that the stress-buffering effects of self-efficacy would be more marked if individuals possessed the approach coping tendencies and have better control over situations (Jex and Gudanowski, 1992; Jimmieson, 2000; Stetz and Bliese, 2006).

Individuals who define stressors as controllable will be more likely to attempt to cope with them effectively. A few research studies (Moyle and Parkes, 1999; Siu., Spector, Cooper, Luo, and Shanfa, 2002) have demonstrated locus of control to be a salient moderator in determining the psychological and physiological impact of those demands. Locus of control depends upon the degree of control an individual has over job demands (Spector, 1982).

This study is in essence an attempt to replicate the basic findings of the study conducted by several researchers (Sehgal 1985; Jimmieson, 2000). However while these authors tried to understand the moderating impact of need motivation, self efficacy and locus of control of respondent groups, the present study investigated their impact across career stages in

order to provide an understanding of the varying nature of its effect in each career stage.

Objectives of the Study

The study sets out to determine the moderating effect of need motivation, self efficacy and locus of control on role stress-job satisfaction relationship across early, mid and late career stages.

Methods

Respondents

Respondents in the research study comprised of 115 officers of the Indian Administrative Services, belonging to the Tamil Nadu Cadre. Of these 39 respondents belong to the early career stage, 41 belong to the mid career stage and 35 belong to the late career stage. The response rate is 39%.

Hypothesis

There will be a significant difference in the nature and magnitude of the moderating effect of variables on role stress-job satisfaction relationship across the career stages.

Measures

Role Stressors

Pareek's Organizational Role Stress (ORS) Scale (1982) considers all dimensions of role stress. The scale consists of 50 items divided into 10 subscales. The subscales are inter-role distance, role stagnation, role expectation conflict, role erosion, role overload, role-isolation, personal inadequacy, self-role distance, role ambiguity and resource inadequacy.

The respondents indicated whether an item is a source of stress to them on a 5-point scale ranging from, 1 (never feel this way) to 5 (always feel this way). Thus the total score on each role stress ranges from 5 to 25. The greater the score the greater is the stress due to a particular source. The alpha reliability of the scale is 0.94.

Job Satisfaction

The current study adopted Minnesota Satisfaction Questionnaire (Luthans, 1992). A short form of the Minnesota Satisfaction Questionnaire (1977) consisting of 20 items. Only 12 relevant items were selected to elicit information. Respondents indicated their degree of satisfaction on a five-point scale ranging from 1 (highly dissatisfied) to 5 (highly satisfied). The total score of the scale ranges from 12 to 60. The reliability of this measure is $\alpha = 0.88$.

Motivation

Motivation is assessed using the motivation scale standardized by McClelland, (1961). This scale was adapted to suit the present study. It is administered on the officers to assess their level of work related need for achievement, need for power and need for affiliation. In all, there are 15 items with 5 items for each of these dimensions. The scale ranges from 1 (rarely motivates) to 5 (strongly motivates). Thus the total score on each dimension ranges from 5 to 25. The measure has an alpha reliability of 0.86.

Locus of Control

Loco inventory (Pareek, 1982) was selected to measure the degree of control a respondent has over job demands. The loco inventory consists of three dimensions namely internality, externality (others) and externality (luck). A person with an internal orientation believes that his or her future is controlled from within. It represents self-confidence in a person's ability to control what happens to him in an organization. A person with external orientation believes that his or her future is controlled by powerful others. Whereas, a person with an external chance orientation believes that his or her future is controlled by luck or chance.

Respondents rated 30 items with 10 items for each dimension on a 5-point scale ranging from 1 (never feel this way) to 5 (strongly feels this way). Scores on each of the three dimensions of locus of control range from 10 to 50. For externality (others) and externality (luck), a higher total score indicates a higher level of external locus of control, and for internality a higher total score indicates a higher level of internal locus of control. Later the scores are reversed for external (others) and external (luck) to facilitate easy analysis of the data. The alpha reliability of the inventory is 0.82.

Self-efficacy

The general self-efficacy scale constructed by Sherer et al. (1982) was used to assess the degree to which respondents, believe they are capable of doing their job well. All the scale consists of 17 items, out of which 10 were selected to measure the general self-efficacy of the IAS officers. The scale ranges from 1 (strongly disagree) to 5 (strongly agree). The score of this scale ranges from 10 to 50. The measure has an alpha reliability of 0.53.

Operational Definition

Career Stages

The officers are distinguished into three stages. They are the early, mid and late career stages (Rabinowitz and Hall, 1981). The first fifteen years is seen as the early career stage (21-35). The next ten years is seen as mid career stage (36-46). And the remaining period until retirement is considered as the late career stage (47-58).

Results and Discussions

Mean and Standard Deviations of Variables

Table 1 highlights the mean values of each variable across career stages. Specifically, the mean score on role stress is 88.30 for early career, 101.15 for mid career and 88.57 for late career. Similarly, the mean scores on the locus of control are 129.97 for early career, 104.51 for mid career and 87.03 for late career. All other mean scores are fairly close across all the three career stages. A significant difference in the mean stress score of respondents belonging to early and mid career stage ($p < .05$) and a significant difference between mid and late career stage ($p < .10$) was observed using post hoc ANOVA test, namely the Duncan's test.

TABLE 1. Mean and Standard Deviations of Variables

Independent variable	No of items	Early career		Mid career		Late career	
		Mean	Std	Mean	Std	Mean	Std
Role stress	50	88.30	21.39	101.15	32.43	88.57	23.10
Moderator variable							
Locus control	30	129.97	23.20	104.51	16.80	87.03	14.05
Self-efficacy	10	41.38	5.91	41.37	3.63	41.86	4.41
Motivation	18	74.74	9.93	.86	9.35	74.46	9.15
Dependent variable							
Job satisfaction	12	49.44	7.66	46.44	7.97	46.29	9.62

Correlation Analysis

Pearson correlation is computed to examine the nature of association among the measures of overall role stress variable, the three moderator variables and the two dependent variables independently for each career stage. The coefficients of correlation between total role stress and the other five independent variables are observed to be negative for the early and mid career stages. Of the five variables, role stress is found to be significantly and negatively related to locus of control ($p < .05$), self-efficacy ($p < .01$), and job satisfaction ($p < .01$) for early career stage. For mid career, a strong adverse relationship is found for locus of control ($p < .01$), self-efficacy ($p < .01$) and job satisfaction ($p < .05$). On the contrary, a weak negative relationship with the other two variables, motivation and commitment is noticed. For late career, the only significant negative relationship is found between role stress and self-efficacy ($p < .05$). For job satisfaction, the relationship with role stress is adverse but not statistically significant. Locus of control and commitment are positively related with role stress though not very significant. A weak negative relationship between role stress and motivation is also noticed.

Of the other 30 inter variable correlations computed, 16 are seen to be statistically significant. The association was found to be positive and significant in three cases for early career. Job satisfaction was significantly correlated to locus of control ($p < .05$), motivation ($p < .01$), and commitment ($p < .05$). With regard to mid career, a significant positive correlation was noticed between job satisfaction and all the other variables. The relationship between locus of control and commitment is significant ($p < .01$). Similar is the case with motivation and self-efficacy ($p < .05$). However, for the late career stage, correlations between motivation, self-efficacy, commitment and job satisfaction were all significant.

The findings indicate a significant positive relationship between motivations and the two dependent variables, job satisfaction and commitment. A strong positive relationship is also witnessed between the two dependent variables, job satisfaction and commitment for all the career stages. This proves that all the three variables are interconnected

Locus of control is observed to distinctly influence satisfaction across the three career stages. For early career ($p < .05$) and mid career ($p < .01$), the relationship is found to be significant. For late career the relationship is found to be negative.

Self-efficacy and locus of control exhibit different relationship for each of the career stages. A positive non-significant relationship for early career, positive and significant relationship ($p < .05$) for mid career and a negative non-significant relationship for the late career stage are observed.

It is interesting to note that no significant positive relationship is found between self-efficacy and commitment for all the three career stages. On the contrary, a significant negative relationship ($p < .01$) between self-efficacy and commitment for early career, a weak positive relationship for mid career and a non-significant negative relationship for late career are noticed.

The correlations distinguish the late career stage from the early and mid career stages. From the above results it can be concluded that the respondents in the late career stage differ in many aspects from those in the early and mid career stages

Linear Moderator Multiple Regression Analyses

The following discussion is with reference to the moderating effect of motivation, self efficacy and locus of control at early, mid and late career stage. A separate moderator multiple regression analysis was carried out for each career stage in order to test if the moderators impact stress-strain relationship differently across career stages. An analysis of such sort would further help in suggesting specific stress management interventions for each career stage. To examine the moderating effect, the moderator multiple regression analyses procedure recommended by Cohen and Cohen (1983) was used. The moderated relationship, often referred to as the interaction, is modeled by including a product term of two main effect variables as an additional independent variable. The predictive ability of two or more independent (predictor) variables for a dependent variable is analyzed. As this study is interested in a measure of the total variance in the dependent variable, explained by the moderators and their relative importance, moderator multiple regression analysis is adopted. A moderator variable is one that interacts with another variable in predicting the dependent variable. The 'F' value for moderator multiple regression analysis was computed. This analysis is to check whether the increase in R^2 is significant.

Only those relationships for which moderator variables have either proved to be positive or negative moderators of stress-satisfaction relationship have been reported here. Self efficacy as a moderator proves to have a positive buffering effect for the early career stage but shows a nil buffering effect on the stress-satisfaction relationship for mid and late career stage (Table 2).

TABLE 2. Role Stress-Self- Efficacy-Job Satisfaction-Moderator Analysis (Early-Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	df	F	p
Job Satisfaction	Early Role stress	0.348	0.652	0.348	37	19.76	0.01
	Self-efficacy	0.372	0.627	0.023	36	1.36	
	Interaction (rsxseef)	0.372	0.627	0.000	35	0.02	
	Inter role distance	0.11	0.89	0.11	37	4.57	0.05
	Self efficacy	0.183	0.817	0.073	36	3.21	
	Interaction (irdxseef)	0.212	0.788	0.029	35	1.28	
	Role stagnation	0.132	0.868	0.132	37	5.62	0.05
	Self efficacy	0.215	0.785	0.083	36	3.80	
	Interaction (rstgxseef)	0.223	0.777	0.008	35	0.36	
	Role expectation conflict	0.144	0.856	0.144	37	6.22	0.05
	Self efficacy	0.192	0.808	0.048	36	2.13	
	Interaction (recxseef)	0.2	0.8	0.008	35	0.35	
	Role erosion	0.027	0.973	0.027	37	1.02	
	Self efficacy	0.154	0.846	0.127	36	5.40	0.05
	Interaction (rexseef)	0.184	0.816	0.03	35	1.28	
	Role overload	0.137	0.863	0.137	37	5.87	0.05
	Self efficacy	0.223	0.777	0.086	36	3.98	
	Interaction (roxseef)	0.223	0.777	0	35	0	
	Role isolation	0.215	0.785	0.215	37	10.13	0.01
	Self efficacy	0.306	0.694	0.091	36	4.72	0.05
	Interaction (rixseef)	0.379	0.621	0.073	35	4.12	0.05

Personal Inadequacy	Self efficacy	0.006	0.994	0.006	37	0.22	
	Interaction (pixseef)	0.139	0.861	0.133	36	5.56	0.05
		0.147	0.853	0.008	35	0.32	
Self role distance	Self efficacy	0.277	0.723	0.277	37	14.17	0.05
	Interaction (srdxseef)	0.383	0.617	0.106	36	6.18	0.05
		0.49	0.51	0.107	35	7.34	0.01
Role ambiguity	Self efficacy	0.555	0.445	0.555	37	46.14	0.01
	Interaction (raxseef)	0.585	0.415	0.03	36	2.60	
		0.646	0.354	0.061	35	6.03	0.05
Resource inadequacy	Self efficacy	0.248	0.752	0.248	37	12.20	0.01
	Interaction (rinxseef)	0.294	0.706	0.046	36	2.34	
		0.307	0.693	0.013	35	0.65	

Results of the analysis indicated that self-efficacy moderated the relation between three role stressors namely, role isolation ($p < .05$), self-role distance ($p < .01$), role ambiguity ($p < .05$) and job satisfaction for the early career stage (Table 2). A significant increase in R^2 value was noticed at all the three levels for role isolation ($R^2 = 21\%$, 30% , 37%), self-role distance ($R^2 = 27\%$, 38% , 49%) and role ambiguity ($R^2 = 55\%$, 58% , 64%).

The analysis confirms self efficacy as a positive moderator. It helps in weakening the negative relationship existing between the three dimensions of role stress and job satisfaction for early career respondents. For mid and late career stage the moderating effect of self-efficacy is not noticed (Table 3 and Table 4). Wanous, (1992) in his study has proved that self efficacy as a moderator plays a major role at early career stage when compared to other career stages. Presumably, self-efficacy impacts stressor-strain relationships because individuals with high self-efficacy perhaps believe they can maintain an acceptable level of job performance despite presence of job-related stressors. This in turn leads to job satisfaction (Judge, Locke, and Durham, 1997).

TABLE 3. Role Stress-self Efficacy-job Satisfaction-moderator Analysis (Mid Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	df	F	p
Job Satisfaction	Role stress	0.096	0.904	0.096	39	4.14	.05
	Self-efficacy	0.176	0.824	0.08	38	3.68	
	Interaction (rsxseef)	0.176	0.824	0	37	0	
	Inter role distance	0.075	0.925	0.075	39	3.16	
	Self efficacy	0.172	0.828	0.097	38	4.45	.05
	Interaction (irdxseef)	0.178	0.822	0.006	37	0.27	
	Role stagnation	0.211	0.789	0.211	39	10.42	.01
	Self efficacy	0.276	0.724	0.065	38	3.41	
	Interaction (rstgxseef)	0.286	0.714	0.01	37	0.51	
	Role expectation conflict	0.027	0.973	0.027	39	1.08	
	Self efficacy	0.155	0.845	0.128	38	5.75	.05
	Interaction (recxseef)	0.157	0.843	0.002	37	0.08	
	Role erosion	0.019	0.981	0.019	39	0.75	
	Self efficacy	0.156	0.844	0.137	38	6.16	.05
	Interaction (rexseef)	0.158	0.842	0.002	37	0.08	
	Role overload	0.002	0.998	0.002	39	0.07	
	Self efficacy	0.157	0.843	0.155	38	6.98	.05
	Interaction (roxseef)	0.164	0.836	0.007	37	0.30	
	Role isolation	0.144	0.856	0.144	39	6.56	.05
	Self efficacy	0.205	0.795	0.061	38	2.91	
	Interaction (rixseef)	0.206	0.794	0.001	37	0.04	
Personal Inadequacy	0.010	0.99	0.01	39	0.39		

Self efficacy Interaction (pixseef)	0.215	0.785	0.205	38	9.92	.01
	0.234	0.766	0.019	37	0.91	
Self role distance Self efficacy Interaction (srdxseef)	0.086	0.914	0.086	39	3.66	
	0.188	0.812	0.102	38	4.77	.05
	0.200	0.8	0.012	37	0.55	
Role ambiguity Self efficacy Interaction (raxseef)	0.103	0.897	0.103	39	4.47	.05
	0.197	0.803	0.094	38	4.44	.05
	0.222	0.778	0.025	37	1.18	
Resource inadequacy Self efficacy Interaction (rinxseef)	0.026	0.974	0.026	39	1.04	
	0.156	0.844	0.13	38	5.85	.05
	0.163	0.837	0.007	37	0.30	

TABLE 4. Role Stress-self Efficacy-job Satisfaction Moderator Analysis (Late-Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	d.f	F	p
Job Satisfaction	Role stress	0.008	0.992	0.008	33	0.26	
	Self-efficacy	0.060	0.94	0.052	32	1.77	
	Interaction (rstgx seef)	0.069	0.931	0.009	31	0.29	
	Inter role distance	0.031	0.969	0.031	33	1.05	
	Self efficacy	0.090	0.91	0.059	32	2.07	
	Interaction (irdx seef)	0.092	0.908	0.002	31	0.06	
	Role stagnation	0.240	0.76	0.24	33	10.42	.01
	Self efficacy	0.250	0.75	0.01	32	0.42	
	Interaction (rstgx seef)	0.250	0.75	0	31	0	
	Role expectation	0.012	0.988	0.012	33	0.40	
	conflict Self efficacy	0.066	0.934	0.054	32	1.85	
	Interaction (recx seef)	0.101	0.899	0.035	31	1.20	
	Role erosion	0.053	0.947	0.053	33	1.84	
	Self efficacy	0.089	0.911	0.036	32	1.26	
	Interaction (rexs seef)	0.129	0.871	0.04	31	1.42	
	Role overload	0.013	0.987	0.013	33	0.43	
	Self efficacy	0.091	0.909	0.078	32	2.74	
	Interaction (rox seef)	0.101	0.899	0.01	31	0.34	
	Role isolation	0.000	1	0	33	0	
	Self efficacy	0.061	0.939	0.061	32	2.07	
	Interaction (rix seef)	0.061	0.939	0	31	0	

Personal Inadequacy	Self efficacy	0.001	0.999	0.001	33	0.03	
	Interaction (pix seef)	0.076	0.924	0.075	32	2.59	
		0.161	0.839	0.085	31	3.14	
Self role distance	Self efficacy	0.136	0.864	0.136	33	5.19	.05
	Interaction (srdx seef)	0.141	0.859	0.005	32	0.18	
		0.143	0.857	0.002	31	0.07	
Role ambiguity	Self efficacy	0.008	0.992	0.008	33	0.26	
	Interaction (rax seef)	0.062	0.938	0.054	32	1.84	
		0.065	0.935	0.003	31	0.09	
Resource inadequacy	Self efficacy	0.006	0.994	0.006	33	0.19	
	Interaction (rinx seef)	0.097	0.903	0.091	32	3.22	
		0.097	0.903	0	31	0	

Note: cell values for p that are missing refers to insignificant values

It is further observed from the analyses that motivation and locus of control did not prove to be an effective moderator of role stress-satisfaction relationship at the early career and mid career stage (Table 5, 6, 8, 9). Further scrutiny of the results exhibits four significant interaction effects for motivation as a moderator at the late career stage (Table 7). Role overload x motivation interaction term added significant incremental variance at step 3 ($R^2= 42\%$; $F=4.03$; $p< .05$). The other interaction term are noted in role isolation x motivation ($R^2= 39\%$; $F=6.60$; $p< .05$), personal inadequacy x motivation ($R^2= 38\%$; $F= 5.01$; $p< .05$), resource inadequacy x motivation ($R^2= 41\%$; $F=6.17$; $p< .05$).

TABLE 5. Role Stress-motivation-Job Satisfaction-Moderator Analysis (Early-Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	df	F	p
Job Satisfaction	Early Role stress	0.348	0.651	0.348	37	19.76	0.01
	Motivation	0.491	0.508	0.143	36	10.17	0.01
	Interaction (rsxmoti)	0.512	0.487	0.020	35	1.48	
	Inter role distance	0.109	0.890	0.109	37	4.55	0.05
	Motivation	0.325	0.674	0.216	36	11.54	0.01
	Interaction (irdxmoti)	0.350	0.649	0.024	35	1.30	
	Role stagnation	0.131	0.868	0.131	37	5.61	0.05
	Motivation	0.357	0.642	0.226	36	12.67	0.01
	Interaction (rstgxmoti)	0.401	0.598	0.0439	35	2.57	
	Role expectn Conflict	0.143	0.856	0.143	37	6.20	0.05
	Motivation	0.298	0.701	0.154	36	7.91	0.01
	Interaction (recxmoti)	0.308	0.691	0.010	35	0.55	
	Role erosion	0.0266	0.973	0.026	37	1.01	
	Motivation	0.290	0.709	0.264	36	13.41	0.01
	Interaction (rexmoti)	0.327	0.672	0.036	35	1.910	
	Role overload	0.137	0.862	0.137	37	5.89	0.05
	Motivation	0.317	0.682	0.180	36	9.51	0.01
	Interaction (roxmoti)	0.336	0.663	0.018	35	0.96	
	Role isolation	0.215	0.784	0.215	37	10.16	0.01

	Motivation	0.410	0.589	0.195	36	11.91	0.01
	Interaction (rixmoti)	0.448	0.551	0.0378	35	2.40	
	Personal Inadequacy	0.005	0.994	0.005	37	0.20	
	Motivation	0.235	0.764	0.230	36	10.85	0.01
	Interaction (pixmoti)	0.239	0.760	0.003	35	0.17	
	Self role distance	0.276	0.723	0.276	37	14.15	0.01
	Motivation	0.442	0.557	0.165	36	10.68	0.01
	Interaction (srdxmoti)	0.462	0.537	0.019	35	1.28	
	Role ambiguity	0.554	0.445	0.554	37	46.07	0.01
	Motivation	0.619	0.380	0.064	36	6.08	0.05
	Interaction (raxmoti)	0.626	0.373	0.007	35	0.65	
	Resource inadequacy	0.248	0.757	0.248	37	12.20	0.01
	Motivation	0.393	0.606	0.145	36	8.63	0.01
	Interaction (rinxmoti)	0.415	0.584	0.022	35	1.31	

TABLE 6. Role Stress-Motivation-Job-Satisfaction-Moderator Analysis (Mid Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	d.f	F	p
Job satisfaction	Role stress	0.096	0.904	0.096	39	4.14	.05
	Motivation	0.206	0.794	0.11	38	5.26	.05
	Interaction (rsxmoti)	0.209	0.791	0.003	37	0.14	
	Inter role distance	0.075	0.925	0.075	39	3.16	
	Motivation	0.183	0.817	0.108	38	5.02	.05
	Interaction (irdxmoti)	0.185	0.815	0.002	37	0.09	
	Role stagnation	0.211	0.789	0.211	39	10.42	.01
	Motivation	0.303	0.697	0.092	38	5.01	.05
	Interaction (rstgxmoti)	0.312	0.688	0.009	37	0.48	
	Role expec Conflict	0.027	0.973	0.027	39	1.08	
	Motivation	0.148	0.852	0.121	38	5.39	.05
	Interaction (recxmoti)	0.152	0.848	0.004	37	0.17	
	Role erosion	0.018	0.982	0.018	39	0.71	
	Motivation	0.158	0.842	0.14	38	6.31	.05
	Interaction (rexmoti)	0.214	0.786	0.056	37	2.63	
	Role overload	0.002	0.998	0.002	39	0.07	
	Motivation	0.137	0.863	0.135	38	5.94	.05
	Interaction (roxmoti)	0.152	0.848	0.015	37	0.65	

	Role isolation	0.143	0.857	0.143	39	6.50	.05
	Motivation	0.255	0.745	0.112	38	5.71	.05
	Interaction (rixmoti)	0.256	0.744	0.001	37	0.05	
	Personal Inadequacy	0.01	0.99	0.01	39	0.39	
	Motivation	0.147	0.853	0.137	38	6.10	.05
	Interaction (pixmoti)	0.151	0.849	0.004	37	0.17	
	Self role distance	0.067	0.933	0.067	39	2.80	
	Motivation	0.172	0.828	0.105	38	4.81	.05
	Interaction (srdxmoti)	0.182	0.818	0.01	37	0.45	
	Role ambiguity	0.103	0.897	0.103	39	4.47	.05
	Motivation	0.206	0.794	0.103	38	4.92	.05
	Interaction (raxmoti)	0.207	0.793	0.001	37	0.04	
	Resource inadequacy	0.026	0.974	0.026	39	1.04	
	Motivation	0.149	0.851	0.123	38	5.49	.05
	Interaction (rinxmoti)	0.151	0.849	0.002	37	0.08	

TABLE 7. Role Stress-Motivation-Job-Satisfaction-Moderator Analysis (Late Career Stage)

Out come Variable	Entered variable	R ²	1- R ²	ΔR ²	d.f	F	p
Job satisfaction	Role stress	0.008	0.992	0.008	33	0.26	
	Motivation	0.270	0.73	0.262	32	11.48	.01
	Interaction (rsxmoti)	0.324	0.676	0.054	31	2.47	
	Inter role distance	0.031	0.969	0.031	33	1.05	
	Motivation	0.310	0.69	0.279	32	12.93	.01
	Interaction (irdxmoti)	0.310	0.69	0	31	0	
	Role stagnation	0.240	0.76	0.24	33	10.42	.01
	Motivation	0.528	0.472	0.288	32	19.52	.01
	Interaction (rstgxmoti)	0.580	0.42	0.052	31	3.83	
	Role expec Conflict	0.012	0.988	0.012	33	0.40	
	Motivation	0.287	0.713	0.275	32	12.36	.01
	Interaction (recxmoti)	0.336	0.664	0.049	31	2.28	
	Role erosion	0.053	0.947	0.053	33	1.84	
	Motivation	0.384	0.616	0.331	32	17.19	.01
	Interaction (rexmoti)	0.407	0.593	0.023	31	1.20	
	Role overload	0.013	0.987	0.013	33	0.43	
	Motivation	0.349	0.651	0.336	32	16.51	.01
	Interaction (roxmoti)	0.424	0.576	0.075	31	4.03	.05
	Role isolation	0.000	1	0	33	0	
	Motivation	0.271	0.729	0.271	32	11.89	.01
	Interaction (rixmoti)	0.399	0.601	0.128	31	6.60	.05

Personal Inadequacy	Motivation	0.001	0.999	0.001	33	0.03	
	Interaction (pixmot)	0.289	0.711	0.288	32	12.96	.01
Self role distance	Motivation	0.136	0.864	0.136	33	5.19	.05
	Interaction (srdxmoti)	0.348	0.652	0.212	32	10.40	.01
Role ambiguity	Motivation	0.008	0.992	0.008	33	0.26	
	Interaction (raxmoti)	0.269	0.731	0.261	32	11.42	.01
Resource inadequacy	Motivation	0.006	0.994	0.006	33	0.19	
	Interaction (rinxmoti)	0.302	0.698	0.296	32	13.57	.01
		0.418	0.582	0.116	31	6.17	.05

It is quiet clear that the adverse effect of role overload, role isolation, personal inadequacy and resource inadequacy on job satisfaction is not reduced for late career respondents. Motivation displays a negative moderating effect; it strengthens the negative relationship between the stressor and job satisfaction. An increase in stress would result in decrease of satisfaction. Motivation as a moderator, instead of reducing the impact of stress on satisfaction, strengthens the negative relationship between the two variables. It is possible that at one stage motivation may act as a negative buffer while in yet another it may not have any moderating effect. This may be due to the different experiences at each career stage. Similar findings are supported by Stone, Mowday, and Porter (1977).

One reason maybe that high achievers tend to have high expectations regarding their job. The expectations grow as individuals' progress through the career stages. Their job satisfaction is influenced by various internal factors like need gratification and external factors like prestige, control and autonomy. Autonomy grants individuals discretion and control in the performance of their work tasks (Engel 1970; Wallace and Jean, 2002). Lack of control and discretion in one's job is associated with

high levels of stress (Hendrix, Robert, Terry and Timothy, 1991; Leiter 1991; Guterman and Srinika, 1994). Organizational and personal initiatives would help reduce stress and increase job satisfaction

The moderating effects of locus of control on stress-job satisfaction relationship for the respondents in all the career stage are also ascertained (Table 8, Table 9, and Table 10). It is observed (Table 10) that locus of control moderates the negative consequences of role stress at the late career stage.

TABLE 8. Role Stress-Internal Locus-Job Satisfaction –Moderator Analysis (Early-Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	df	F	p
Job Satisfaction	Early Role stress	0.348	0.652	0.348	37	19.74	0.01
	Internal Locus	0.459	0.541	0.111	36	7.38	0.01
	Interaction (rsxinloco)	0.46	0.54	0.001	35	0.06	
	Inter role distance	0.11	0.89	0.11	37	4.57	0.05
	Internal locus	0.206	0.794	0.096	36	4.35	0.05
	Tinteraction (irdxinloco)	0.21	0.79	0.004	35	0.17	
	Role stagnation	0.132	0.868	0.132	37	5.62	0.05
	Internal locus	0.3	0.7	0.168	36	8.64	0.01
	Interaction (rstgxinloco)	0.302	0.698	0.002	35	0.10	
	Role expectation	0.144	0.856	0.144	37	6.22	0.05
	Conflict Internal locus	0.241	0.759	0.097	36	4.60	0.05
	Interaction (recxinloco)	0.294	0.706	0.053	35	2.62	

	Role erosion	0.027	0.973	0.027	37	1.02	
	Internal locus	0.201	0.799	0.174	36	7.83	0.01
	Interaction (rexinloco)	0.201	0.799	0	35	0	
	Role overload	0.137	0.863	0.137	37	5.87	0.05
	Internal locus	0.226	0.774	0.089	36	4.13	0.05
	Interaction (roxinloco)	0.226	0.774	0	35	0	
	Role isolation	0.215	0.785	0.215	37	10.13	0.01
	Internal locus	0.335	0.665	0.12	36	6.49	0.05
	Interaction (rixinloco)	0.336	0.664	0.001	35	0.05	
	Personal Inadequacy	0.006	0.994	0.006	37	0.22	
	Internal locus	0.148	0.852	0.142	36	6	0.05
	Interaction (pixinloco)	0.148	0.852	0	35	0	
	Self role distance	0.277	0.723	0.277	37	14.17	0.01
	Internal locus	0.401	0.599	0.124	36	7.45	0.01
	Interaction (srdxinloco)	0.401	0.599	0	35	0	
	Role ambiguity	0.555	0.445	0.555	37	46.14	0.01
	Internal locus	0.635	0.365	0.08	36	12	0.01
	Interaction (raxinloco)	0.635	0.365	0	35	0	
	Resource inadequacy	0.248	0.752	0.248	37	12.20	0.01
	Internal locus	0.352	0.648	0.104	36	5.77	0.05
	Interaction (rinxinloco)	0.353	0.647	0.001	35	0.05	

TABLE 9. Role Stress-Internal Locus-Job Satisfaction–Moderator Analysis (Mid Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	df	F	p
Job Satisfaction	Role stress	0.096	0.904	0.096	39	4.14	.05
	Internal Locus	0.232	0.768	0.136	38	6.72	.05
	Interaction (rsxinloco)	0.240	0.76	0.008	37	0.38	
	Inter role distance	0.075	0.925	0.075	39	3.16	
	Internal locus	0.232	0.768	0.157	38	7.76	.01
	Interaction (irdxinloco)	0.267	0.733	0.035	37	1.76	
	Role stagnation	0.211	0.789	0.211	39	10.42	.05
	Internal locus	0.271	0.729	0.06	38	3.12	
	Interaction (rstgxinloco)	0.281	0.719	0.01	37	0.51	
	Role expectation conflict	0.027	0.973	0.027	39	1.08	
	Internal locus	0.229	0.771	0.202	38	9.95	.01
	Interaction (recxinloco)	0.229	0.771	0	37	0	
	Role erosion	0.019	0.981	0.019	39	0.75	
	Internal locus	0.229	0.771	0.21	38	10.35	.001
	Interaction (rexinloco)	0.243	0.757	0.014	37	0.68	
	Role overload	0.002	0.998	0.002	39	0.07	
	Internal locus	0.261	0.739	0.259	38	13.31	.01
	Interaction (roxinloco)	0.271	0.729	0.01	37	0.50	

Role isolation	0.144	0.856	0.144	39	6.56	.05
Internal locus	0.273	0.727	0.129	38	6.74	.05
Interaction (rixinloco)	0.316	0.684	0.043	37	2.32	
Personal Inadequacy	0.010	0.99	0.01	39	0.39	
Internal locus	0.257	0.743	0.247	38	12.63	.01
Interaction (pixinloco)	0.282	0.718	0.025	37	1.28	
Self role distance	0.086	0.914	0.086	39	3.66	
Internal locus	0.252	0.748	0.166	38	8.43	.01
Interaction (srdxinloco)	0.270	0.73	0.018	37	0.91	
Role ambiguity	0.103	0.897	0.103	39	4.47	.05
Internal locus	0.259	0.741	0.156	38	8	.01
Interaction (raxinloco)	0.259	0.741	0	37	0	
Resource inadequacy	0.026	0.974	0.026	39	1.04	
Internal locus	0.246	0.754	0.22	38	11.08	.01
Interaction (rinxinloco)	0.247	0.753	0.001	37	0.05	

TABLE 10. Role Stress-Internal Locus-Job Satisfaction –Moderator Analysis (Late Career Stage)

Out come variable	Entered variable	R ²	1- R ²	ΔR ²	d.f	F	p
Job Satisfaction	Role stress	0.008	0.992	0.008	33	0.26	
	Internal Locus	0.028	0.972	0.02	32	0.65	
	Interaction(rstgx inloco)	0.155	0.845	0.127	31	4.65	.05
	Inter role distance	0.031	0.969	0.031	33	1.05	
	Internal locus	0.070	0.93	0.039	32	1.34	
	Interaction(irdx inloco)	0.321	0.679	0.251	31	11.45	.01
	Role stagnation	0.240	0.76	0.24	33	10.42	.01
	Internal locus	0.262	0.738	0.022	32	0.95	
	Interaction(rstgx inloco)	0.267	0.733	0.005	31	0.21	
	Role expectation conflic	0.012	0.988	0.012	33	0.40	
	Internal locus	0.061	0.939	0.049	32	1.66	
	Interaction (recx inloco)	0.160	0.84	0.099	31	3.65	
	Role erosion	0.053	0.947	0.053	33	1.84	
	Internal locus	0.063	0.937	0.01	32	0.34	
	Interaction (rex inloco)	0.094	0.906	0.031	31	1.06	
	Role overload	0.013	0.987	0.013	33	0.43	
	Internal locus	0.04	0.96	0.027	32	0.9	
	Interaction (rox inloco)	0.116	0.884	0.076	31	2.66	

Role isolation	0.000	1	0	33	0	
Internal locus	0.027	0.973	0.027	32	0.88	
Interaction (rix inloco)	0.064	0.936	0.037	31	1.22	
Personal Inadequacy	0.001	0.999	0.001	33	0.03	
Internal locus	0.030	0.97	0.029	32	0.95	
Interaction (pix inloco)	0.253	0.747	0.223	31	9.25	.01
Self role distance	0.136	0.864	0.136	33	5.19	.05
Internal locus	0.139	0.861	0.003	32	0.11	
Interaction (srdx inloco)	0.140	0.86	0.001	31	0.03	
Role ambiguity	0.008	0.992	0.008	33	0.26	
Internal locus	0.029	0.971	0.021	32	0.69	
Interaction (rax inloco)	0.036	0.964	0.007	31	0.22	
Resource inadequacy	0.006	0.994	0.006	33	0.19	
Internal locus	0.032	0.968	0.026	32	0.85	
Interaction (rinx inloco)	0.078	0.922	0.046	31	1.54	

Locus of control as a moderator variable helps the late career respondents in reducing stress. As a moderator of stress-satisfaction relationship, locus of control displayed 3 regressions to be positive and significant for the late career. The interaction effect is noticed for overall role stress x internal locus ($R^2=15\%$; $F=4.65$; $p<.05$), inter role distance x internal locus ($R^2=32\%$; $F=11.45$; $p<.01$) and personal inadequacy x internal locus ($R^2=25\%$; $F=9.25$; $p<.01$). It plays an effective role in reducing the negative impact of overall role stress, personal inadequacy and inter-role distance conflict on job satisfaction. This points to the fact that locus of control acts as a better positive buffer of stress when compared to motivation for the late career respondents.

For early and mid career, no interaction effect was noticed (Tables 8 and 9). A high level of internal locus helps the late career respondents to reduce the negative impact on satisfaction of certain stressors like the overall role stress, inter role distance and personal inadequacy.

The empirical evidences have no doubt proved that "internals" believe that they can control and "externals" believe that they cannot control events. This has implications for job satisfaction and job involvement (Spector 1982; Keller, 1984; Oi-ling Siu, 2002). On the contrary the findings of some studies report mixed results regarding locus of control as a moderator variable (Kimmons and Greenhaus 1976; Batlis 1980). The current study proves that locus of control as a moderator helps late career respondents rather than early career and mid career respondents.

Conclusions

The three moderator variables-motivation, locus of control and self-efficacy all have a buffering effect on the relationship between role stress and the outcome variable viz. satisfaction. However, the nature of the effect is different in each of the career stages. Results point to the fact that the moderator variables can be used to address satisfaction outcome.

With regard to motivation variable, it can be concluded that the high motivation needs of the late career respondents do not match with the challenges and opportunities provided to them by the job. The high need for motivation is in fact found to strengthen the negative relationship between role stressors and job satisfaction. This otherwise means that the gap between the expectations of the late career respondents and what is actually being provided to them is very wide, resulting in stress.

Internal locus, on the contrary, helps the late career respondents in reducing the adverse impact of role stress on job satisfaction. The respondents in this stage of career are able to define stressors as controllable. They are more likely to cope with them effectively and thereby experience fewer negative consequences. It helps them to move forward with their responsibilities despite deficiency in the system. For early and mid career stages, no interaction effect is observed either for motivation or for locus of control.

As a moderator of job satisfaction, self-efficacy plays a vital role at the early career stage. The respondents' belief that they are capable of discharging their duties efficiently keep them confident and satisfied. No other interaction effect is significant at the mid and late career stages.

AUTHOR NOTES

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APPENDICES

APPENDIX 1. Early-career self-efficacy with dimensions of role stress and job satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	57.907	2.876		20.131	.000
	role isolation	-.928	.291	-.464	-3.188	.003
2	(Constant)	38.854	9.224		4.212	.000
	role isolation	-.834	.281	-.417	-2.969	.005
	early self efficacy	.435	.201	.304	2.164	.037
3	(Constant)	80.493	22.307		3.608	.001
	role isolation	-5.575	2.347	-2.789	-2.375	.023
	early self efficacy	-.545	.519	-.381	-1.050	.301
	moderator	.113	.055	2.380	2.033	.050

a. Dependent Variable: earlyjob satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	60.840	3.210		18.953	.000
	self role distance	-1.316	.350	-.526	-3.763	.001
2	(Constant)	40.678	8.638		4.709	.000
	self role distance	-1.248	.329	-.499	-3.799	.001
	self efficacy	.468	.188	.327	2.490	.018
3	(Constant)	97.852	22.498		4.349	.000
	self role distance	-7.987	2.498	-3.193	-3.197	.003
	self efficacy	-.905	.534	-.633	-1.695	.099
	moderator	.162	.060	2.803	2.717	.010

a. Dependent Variable: earlyjob satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	66.333	2.624		25.280	.000
	role ambiguity	-2.535	.373	-.745	-6.788	.000
2	(Constant)	54.318	7.776		6.985	.000
	role ambiguity	-2.369	.379	-.696	-6.250	.000
	self efficacy	.261	.159	.182	1.637	.110
3	(Constant)	106.082	22.431		4.729	.000
	role ambiguity	-10.851	3.494	-3.188	-3.105	.004
	self efficacy	-1.009	.541	-.706	-1.864	.071
	moderator	.210	.086	2.424	2.440	.020

a. Dependent Variable: earlyjob satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	66.333	2.624		25.280	.000
	role ambiguity	-2.535	.373	-.745	-6.788	.000
2	(Constant)	54.318	7.776		6.985	.000
	role ambiguity	-2.369	.379	-.696	-6.250	.000
	self efficacy	.261	.159	.182	1.637	.110
3	(Constant)	106.082	22.431		4.729	.000
	role ambiguity	-10.851	3.494	-3.188	-3.105	.004
	self efficacy	-1.009	.541	-.706	-1.864	.071
	moderator	.210	.086	2.424	2.440	.020

a. Dependent Variable: earlyjob satisfaction

APPENDIX 2. Late-career motivation with dimensions of role stress and job-satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.926	3.910		11.234	.000
	roleoverload	.285	.428	.115	.665	.511
2	(Constant)	-7.396	13.026		-.568	.574
	roleoverload	.736	.370	.297	1.989	.055
	latemotivation	.639	.157	.608	4.066	.000
3	(Constant)	-64.062	30.952		-2.070	.047
	roleoverload	7.472	3.387	3.016	2.206	.035
	latemotivation	1.395	.407	1.327	3.429	.002
	roxmotivation	-9.14E-02	.046	-2.610	-2.000	.054

a. Dependent Variable: latejobsatisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.622	4.267		10.926	.000
	roleisolation	-3.71E-02	.433	-.015	-.086	.932
2	(Constant)	4.217	12.841		.328	.745
	roleisolation	.115	.378	.046	.304	.763
	latemotivation	.551	.160	.524	3.448	.002
3	(Constant)	-62.083	28.355		-2.189	.036
	roleisolation	7.619	2.937	3.062	2.594	.014
	latemotivation	1.458	.382	1.387	3.817	.001
	roleisolationxmotivation	-.103	.040	-3.060	-2.573	.015

a. Dependent Variable: late job

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	45.541	5.045		9.026	.000
	personalinadequacy	9.876E-02	.632	.027	.156	.877
2	(Constant)	-.721	13.550		-.053	.958
	personalinadequacy	.527	.554	.145	.950	.349
	latemotivation	.578	.160	.550	3.602	.001
3	(Constant)	-70.619	33.779		-2.091	.045
	personalinadequacy	9.139	3.888	2.516	2.350	.025
	latemotivation	1.527	.451	1.452	3.388	.002
	pixmotivation	-.118	.053	-2.370	-2.235	.033

a. Dependent Variable: latejobsatisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.213	4.770		9.270	.000
	resourceinadequacy	.233	.504	.080	.463	.646
2	(Constant)	-1.758	13.143		-.134	.894
	resourceinadequacy	.534	.437	.184	1.223	.230
	latemotivation	.582	.158	.553	3.678	.001
3	(Constant)	-88.963	37.141		-2.395	.023
	resourceinadequacy	10.018	3.837	3.450	2.611	.014
	latemotivation	1.733	.486	1.648	3.567	.001
	rinxmotivation	-.126	.051	-3.263	-2.486	.019

a. Dependent Variable: latejobsatisfaction

**APPENDIX 3. Late-career locus of control with dimensions
of role stress and job-satisfaction**

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1. (Constant)	49.685	6.607		7.520	.000
laterolestress	-3.84E-02	.072	-.092	-.531	.599
2. (Constant)	56.835	11.040		5.148	.000
laterolestress	-1.90E-02	.076	-.045	-.248	.806
lateinternal locus	.102	.126	-.149	-.811	.423
3. (Constant)	143.254	41.409		3.459	.002
laterolestress	-.937	.432	-2.248	-2.170	.038
lateinternal locus	-1.138	.495	-1.661	-2.299	.028
rolestressxintlocus	1.090E-02	.005	3.058	2.157	.039

a. Dependent Variable: late job satisfaction

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1. (Constant)	45.541	5.045		9.026	.000
personalinadequacy	9.876E-02	.632	.027	.156	.877
2. (Constant)	55.032	10.912		5.043	.000
personalinadequacy	.214	.643	.059	.332	.742
lateinternal locus	-.119	.121	-.174	-.981	.334
3. (Constant)	157.941	35.173		4.490	.002
personalinadequacy	-12.617	4.253	-3.474	-2.966	.006
lateinternal locus	-1.361	.422	-1.986	-3.225	.003
personalinadexlocus	.154	.050	4.280	3.045	.005

a. Dependent Variable: latejobsatisfaction

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	42.267	4.219		10.019	.000
interroledistance	.395	.383	.177	1.032	.309
2. (Constant)	53.340	10.526	.210	5.068	.000
interroledistance	.470	.386	-.198	1.216	.233
lateinternal locus	-.136	.119		-1.147	.260
3. (Constant)	130.539	24.531		5.321	.000
interroledistance	-6.774	2.163	-3.032	-3.133	.004
lateinternal locus	-1.022	.281	-1.491	-3.639	.001
interroledistxloco	8.219E-02	.024	3.722	3.391	.002

a. Dependent Variable: late job satisfaction

Book Review

Nazrul Islam. *Global Technological Change Impact on Textile and Garment Workers: A Comparative Study of Bangladesh and Thailand*, Dhaka: Ahmed Publishing House, 2006. 281 pages.

The book entitled *Global Technological Change Impact on Textile and Garment Workers: A Comparative Study of Bangladesh and Thailand* has been written by Nazrul Islam, Associate Professor, School of Business, North South University, Bangladesh. The book has been published by Ahmed Publishing House, Dhaka in August 2006. It entails an overall comprehension of the present status of workers of textile and garments industries in Bangladesh and Thailand, and how they are coping with various technological changes occurring on a global scale.

The book describes the study of how job security, job satisfaction and work relations of the workers are being affected as a consequence. The socio-economic impact on the workers of Bangladesh and Thailand was analyzed discretely with view over income, benefits, and social concerns. Issues related to familiarizing both managers and workers with the technological advancements were investigated. The sample size included 610 workers and 229 managers from various textile and garment industries in Bangladesh and Thailand.

The book comprises of nine chapters including the introduction and methodology followed by an overview of the textile and garment industries in South and Southeast Asian countries, impact of technological change on textile and garments workers in Bangladesh and Thailand, a comparison of the impacts in Bangladesh and Thailand, managers perspective of technological change on workers; and finally a concluding chapter summing up the whole issue including further recommendations.

In the introductory chapter, the author points out a basic conceptual framework for analyzing the impact of technological change on textile and garments workers. It has been stated that major changes occurred in the manufacturing functions that created a significant impact on workers and their involvement in the various changing activities.

The next chapter titled 'Methodology' comprises of the impact analysis and sample design of the data sources. The study is based on mainly primary data. The sample was selected purposively among only large and medium companies. Descriptive and inferential statistical methods were undertaken to analyze the socio-economic impact with respect to job security, job satisfaction and work relations. Regression and factor analysis were done to identify the impact.

In the chapter on textile and garment industry in South and Southeast Asian countries the writer dealt more with the overall performance, the associated labor cost, international exports and projected annual changes of the sector. A brief background of the textile and garments industry in Bangladesh and Thailand was also stated here. The present status of the industry with respect to a few market indicators has been investigated and the overall result obtained depicted the significant contribution of the industries in the region in worldwide exports. In spite of that, the industries in this region are still lagging behind as they depend mostly on the labor-intensive technologies. The need for superior technologies hence needs to be emphasized.

Once the background of the industry has been described the book moves on to highlight the impacts in Bangladesh and Thailand separately. Among the workers in Bangladesh, the relationship of the technological change and demographic variables with the job security, job satisfaction and work relations and hence the overall socio-economic impact has been analyzed. An investigation was also conducted on the influence this change is having on the women workers in Bangladesh. Workers tend to become frustrated with meeting the increasing demands and qualifications as a result of these changes, and hence job security gets hampered. Job satisfaction has been both positively and negatively affected. Work relations are positively influenced. In Thailand, the influence relationship and impact analysis had been done in a similar way. The results show that the negative effect of job security is increased skill demand, while the positive effect on job satisfaction is mainly due to increased fair pay. Work relations have also been positively influenced and thus providing scope for training and skill development.

An overall impact difference between the workers of Bangladesh and Thailand with respect to job security, job satisfaction and work relations were also elaborated. The results obtained were not statistically significant. The writer states at a point "Bangladeshi workers

significantly differ in their views about job security impact of technological change than the Thai workers. Bangladeshi workers are comparatively more negative to work pressure than their Thai counterparts". Considerable differences have been observed between the attitude towards job satisfaction among the Bangladeshi and Thai workers. Bangladeshi workers find the pay scale and remuneration inappropriate, while the Thai counterparts find it to their satisfaction. Work relation outlook has been found to be significantly different among the two groups of workers. "Bangladeshi workers are more positive to the increase of training and skill development and decrease of conflict, and fewer downsizing compared to Thai workers" – this is how the writer puts forward the attitude towards the change. Job security of Bangladeshi women is negatively affected. The other viewpoints of the women workers have been found to be more or less same as the other workers.

Last of all the perspective of the managers had been studied. The Human Resource Management (HRM) and its relationship with the overall change and its impact among the Bangladeshi and Thai Managers had been dealt with. The managers think this change is positively related to work relations. They believe that motivation and skill development can aid toward proper utilization of the changed situation.

Hence, in this study it has been found that sophistication and shifting to the capital-intensive production in order to meet the demands of the international competitor market and the consumers, has created a negative impact on the job security, job satisfaction and work relations of the workers in the textile and garment industries in Bangladesh and Thailand. At the same time the results show a 'slightly positive overall impact' on the workers of labor-intensive companies. HRM puts forward the need for performance appraisal and strong monitoring and control of work. This book thus gives an overview of the socio-economic impact but there still remains scope for social, economic, political and legal aspects analysis of the situation.

Rayyan Hassan

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Rahman concludes that "stock markets are volatile because of frequent changes in the exchange rate" (1999, p.17).

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For Book

Huq, C. H. (1997). *Gender and development: An inquiry into the roots of unequal Development*. Dhaka: UCL Publishers.

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