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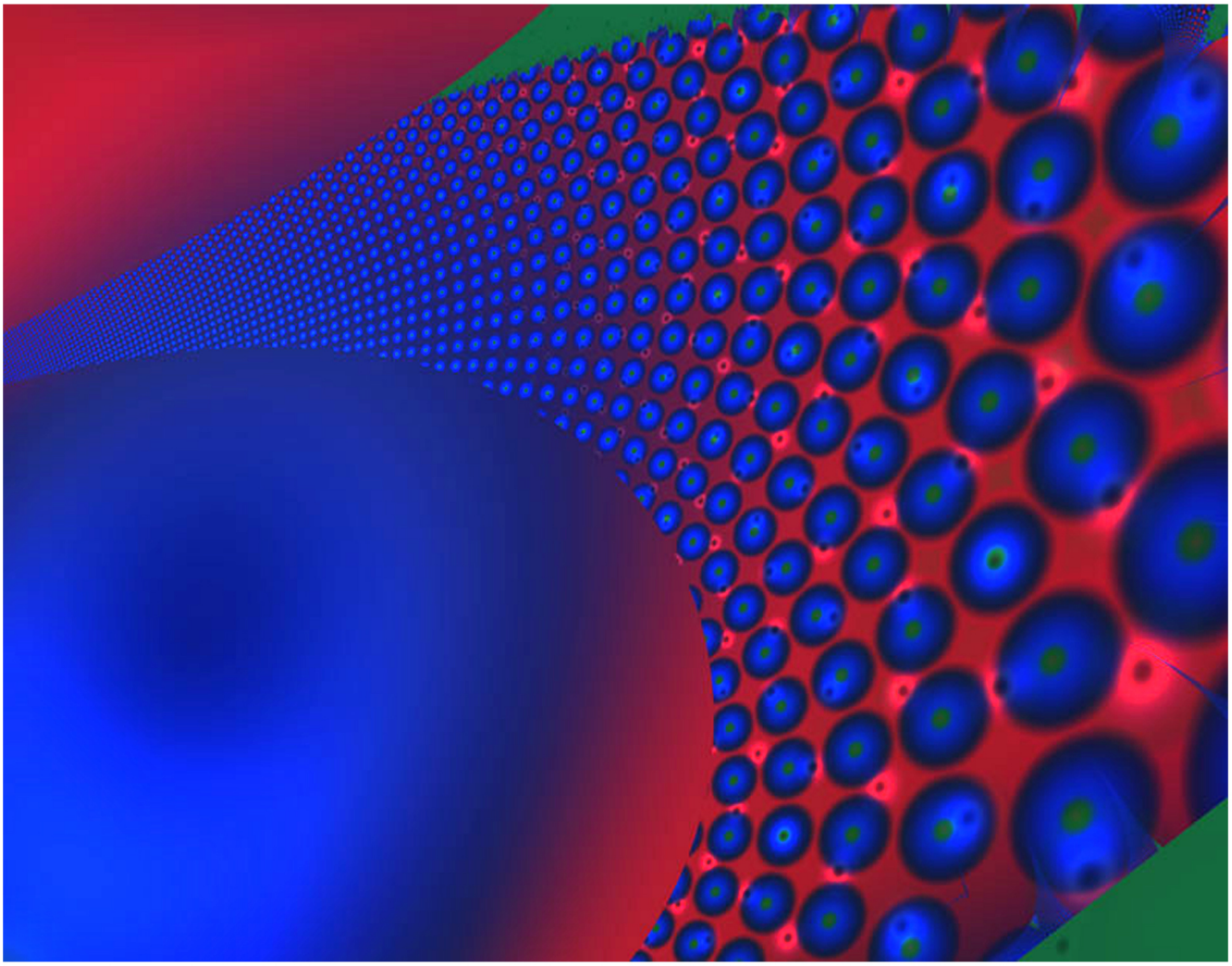

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The influence of Business Process re-engineering on Service Quality: Evidence from Service Industry in Tanzania

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ABSTRACT

Problem Statement*: In today's business environment, customers are focusing on getting quality services that meet their expectations. Poor quality services leads to loss of customers, and this is particularly so with service industry. Therefore, service organizations need to offer services that delight customers. Improved business has been reported to be associated with dramatic improved service quality. Despite documented potentiality, there are mixed empirical results, findings and conclusions regarding the benefits of BPR on service quality. Therefore, this paper aimed at assessing and explaining the effects of BPR and service delivery speed on service quality.* ***Methodology:*** *The study used cross-sectional survey design to investigate the effect of BPR on service quality. Intensive literature review enabled to construct structural measurement model, formulate testable hypotheses and to operationalize constructs. In total ninety five (95) service organizations participated in the study.* ***Results:*** *Results of the study reveal that BPR positively directly and indirectly affects service quality. In the indirect effect, it was found that BPR positively affects delivering speed which in turn affects service quality. Therefore from these finding, it has been revealed that BPR has significant positive effect on both service quality and delivering speed.* ***Conclusion:*** *BPR influences both service quality and delivery speed of service organizations in of Tanzania. Based on the results, findings and conclusions from this study, it is recommended that service organizations should have concrete plans when adopting BPR techniques, which are considered key to improved service quality. In that way, service organizations will provide services that delight customers.*

Keywords*: Process Re-engineering, Service Quality, Service Organization, Information Technology*

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1. BACKGROUND

Organizational effectiveness and efficiency have become watchwords in modern business that is characterized by competition. Organizations work hard to improve business processes for enhanced organizational performance while meeting customer's expectations. Several techniques, namely Business Process Re-engineering (BPR), Total Quality Management (TQM), Business Process Improvement (BPI), Business Process Redesign (BPR) and Business Process Management (BPM) are being used as part of organizational performance improvement strategies. Amongst the performance improvement techniques, business process re-engineering (BPR) is a radical technique proven to be the most effective means of enhancing organizational effectiveness and efficiency (Sungau & Msanjila, 2012).

Before the emergency of BPR, organizations divided works into small and simple tasks. This led to dominance of functional structured organizations. These functional structures later encountered some problems emanating mainly from changing competitive environment coupled with changing taste of customers (Chen, 2001). These problems have forced organizations to identify techniques that enable them cope with the changing business environment and complex taste of customers. In early 1990s, Hammer, et al suggested BPR to be a technique that was considered superior in coping with global business competition (Hammer & Champy, 1993).

BPR was started for a variety of business reasons, in both manufacturing and service industries. The reasons include; re-inventing the way of doing work to satisfy customers, becoming competitive and curing systematic process and behavioural problems. Other business reasons are; enhancing capability to expand to other industries, accommodating an era of change, satisfying customers, employees and other stakeholders who dramatically want differences. BPR enables organizations to achieve different results, to survive and success in the long term, and to invent the "rules of the game" (Shin & Jemella, 2002).

As a series of management activities, BPR breaks the traditional theory system of labour division. It makes use of fast developing Information Technology (IT) and combines several tasks (Hammer & Champy, 1993; Chenghu, 2006). In that way, BPR enhances reforming of traditional business process to reduce operational costs and improve service quality for adaption of market change and strengthen risk control (Chenghu, 2007).

According to Al-Mashara, at al (2001), most organizations knowingly or not, are involved in BPR. The pressure for survival in the market, need to prevent complacency, the desire to close competitive gaps and achieve superior performance standards has prompted organizations to adapt BPR technique.

In Tanzania, there is ample evidence that organizations practice BPR activities. Most organizations renovate, automate and network their business processes. Besides, the presence of BPR consultancy companies and individuals offering BPR-related consultancy services is also a clear evidence that Tanzanian organizations practice BPR. For instance, Electro Business Ltd, Deloitte, and MS-Training Center for Development are among the companies offering BPR consultancy in Tanzania.

Despite the documented potentiality and popularity of BPR, organizations adopt the technique in an ad-hoc manner and for most part none-existent. Furthermore, mixed results of organizations that have implemented BPR prompt one to conclude that there is still a gap in knowledge regarding the influence of BPR on service quality (O'Neill & Sohal, 1999).

The current paper aims at assessing and explaining the influence of BPR on service quality in service organizations with the following being specific objective:-

- To determine the effect of BPR on service quality of service industry
- To determine the effect of delivering speed on service quality of service industry

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2. BUSINESS PROCESS RE-ENGINEERING DEFINED

BPR became important in the early 1990's when Hammer et al published their book, "Re-engineering the Corporation". According to Chen (2001), BPR is known by many names, such as, core process redesign, new industrial engineering and working smarter. All of these imply the same concept; focusing on integrating both business process redesign and IT use to support the re-engineering work. According to Hammer and Champy (1993), BPR is the *fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed.*

Business processes are characterized by three elements: inputs (customer inquiries or materials), *processes* (several stages of input-conversion; time and money consuming) and *output* (delivery of expected results). To deliver what is required by customers on time, organizations need to perfect their business processes. In practice, BPR involves discovering how business processes currently operates, how to redesign these processes to eliminate the wasted or redundant effort and improve efficiency and how to implement the process change in order to gain competitiveness (Chen, 2001). In this respect, BPR is seeking to invent new ways of organizing tasks, people and redesigning IT systems so that processes support the organization to realize its goals.

3. ACTIVITIES OF BUSINESS PROCESS RE-ENGINEERING

Given the above conception of business process re-engineering*, business processes renovation, automation and networking* are considered as key activities of BPR. These activities are presented and discussed as follows:-

Business process renovation – It is the redesigning of business processes for the purpose of improving business operations. Renovation process involves streamlining key business processes, making of succession or continuity of progression of work activities and sometimes combining other business processes (Simon, 1994; Covert, 1997; Zygiaris, 2000; Shin & Jemella, 2002; Debela, 2009). Before the automation, organizations need to renovate their business processes in order to avoid automating non-adding value business processes. For instance, Hammer (1990) suggested that "*in order to achieve significant benefits, it is not sufficient to computerize the old ways, but a fundamental redesign of the core business processes is necessary"*. The fundamental redesign of the core business process enable the organization renovate business process by identifying which business processes are redundant and can be removed, grouping similar activities together, replacing old machines with new ones, keeping gangways clear and keeping business sections with high frequency of to-from movement close together (Al-Mashara, et al., 2001; Terziovski, et al., 2002; Magutu, et al., 2010). Furthermore, renovation brings about the sequencing of works in a natural way which leads to less rework of tasks which has been a major source of delays in organizations (Broersma, 1997).

Business process automation – It is the mechanization of business processes in order to improve efficiency of the process by using ICT (Shin & Jemella, 2002; Debela, 2009). IT plays a major role in BPR as it provides processes automation. It allows the business to be conducted in different locations and permits quicker delivery to customers and support rapid service provision and paperless transactions. In general it allows an efficient and effective change in the manner in which work is performed (Zygiaris, 2000). According to Hammer (1990), the computerization is the use of IT in order to automate the renovated business processes. Automation involves the use of IT, the allocating of customer information

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from the database, facilitation of information flow and programming a device or machine to function without an operator frequent interaction (Terziovski, et al., 2002, He, 2005).

Business process networking – It is the linking of activities/customers inside/outside the section/organization to improve coordination by using IT. According to Zygiaris (2000) *in the 1990s when telecommunication technologies were becoming abundant and low costing, BPR was becoming a world-wide applicable managing technique for business upgrade, enabled by the technology. Employees can easily operate as a team using intranet/extranets, workflow and groupware applications, eliminating distances. We can work together even though we are located in different places.* In this case, the application of IT eases commutation (Al-Mashara, et al., 2001; Attaran, 2004; He, 2005); facilitate accessibility of organizational information and linking managers/sections to different sections (He, 2005). In this sense, IT is enabler of BPR and improves competitive position of an organization (Chen, 2001; Sungau & Msanjila, 2012). According to Hammer (1990), computerization is the use of IT in order to network the renovated business processes. The networking involves the enabling communication, access to information and connects mangers to different sections (Chen, 2001; Al-Mashara, et al., 2001; He, 2005).

4. BUSINESS PROCESS RE-ENGINEERING AND SERVICE QUALITY

Service quality is the fulfilling of the customers' requirements, expectations and satisfactions (Tan, et al., 2010; Xiaoli, 2011). According to Cronin and Taylor (1992), service quality is described as the difference between the product or service performance and customer expectations. In other words, realized service quality is a gap between customer expected and perceived qualities. Since service quality is constructed from multiple items, it may be assessed based on the characteristic of service delivery system (Yasin, et al., 2004). In theory and practice, service quality is measured by assurance, responsiveness, reliability, tangibles and empathy (Parasuraman, et al., 1988).

BPR enables organizations to adjust, combine and rationalize business processes; and these ensure high quality services (Hesson, 2007). For instance, a study by Lazano (1996: cited in Mothobi, 2002), found -that BPR improves quality by 45 percent; improvement that is reflected in increased revenue, reduced costs and increased productivity.

Technology plays an important role in supporting BPR; it allows rapid development of various *ready-to-use best-practice templates* that suits most needed business processes; it enables and leverages values of standardization, automation, integration and innovation. All this shortens the transition phase and minimizes the impact and duration of transition, and so accelerates the time to benefit, till reaching the quality levels and a streamlined operation (Sungau & Msanjila, 2012).

According to Hammer (1990), Hammer and Champy (1993), and Chenghu (2007), BPR brings significant benefits to organizations. The benefits include improvement in delivering speed, reduction in operational cost and improvement in service quality. In summary, BPR improves service quality (Jones, et al., 1997 and Slack, et al., 2007) by:

- Enabling the organization to deliver a promised service in accurate manner;
- Facilitating employee willingness to help customers and provide prompt services;
- Enabling employees to inspire trust to customers and confidence in providing services;
- Enhancing physical elements that facilitate service provision and enables employees to treat customers as individuals (Parasuraman, et al., 1988; Al-Mashara, et al., 2001; Terziovski, et al, 2002).

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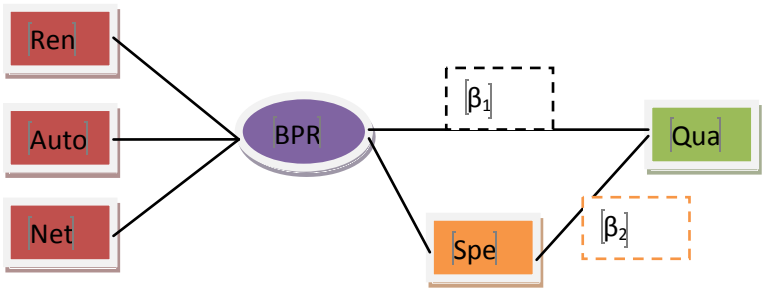
Furthermore, BPR improves service quality via fostering delivering speed. The delivering speed is improved by shortening cycle time in serving a customer, minimizing delays in serving a customer, speed up communication, fastening decision making and shortening the period taken to deliver a service since its request (Jones, et al., 1997; Al-Mashara, et al., 2001; Slack, et al., 2007).

The above reviewed literature on the link between BPR and service quality enables to settle on a conceptual framework that was subjected to empirical investigation. The framework describes the relationship between BPR and delivering speed as exogenous constructs and service quality as endogenous construct. Figure 1 below summarizes the conceptual framework of the study.

Figure 1: Conceptual framework



Based on the literature review and the above conceptual framework, a form operational and/or statistical model in linear form that guided the study is:

$$Qua = \beta_1 BPR + \beta_2 Spe + \varepsilon \text{ ----------(1)}$$

Two hypotheses were considered relevant for this study; *H_{O1}: BPR has no correlation with service quality in service organizations and H_{O2}: Delivering speed has no correlation with service quality in service organizations.* The corresponding statistical or operational null and alternative hypotheses were:

$$H_{01}: \beta_1 = 0 \quad H_{a1}: \beta_1 \neq 0 \text{ and } H_{02}: \beta_2 = 0 \quad H_{a2}: \beta_2 \neq 0$$

5. METHODOLOGY

Justification of paradigm and methodology: This study has used a positivist paradigm in order to generate hypotheses that are empirically tested. In this study, firstly, intensive literature review was undertaken in order to narrow the gap between the concept and research languages (Ndunguru, 2007). The second step was to collect and analyze data from survey. Thirdly, the structural equation modeling (SEM) structure was formulated with both observable and unobservable construct to study the interdependence of constructs. The constructs were measured by using multi-items scales which were total aggregated to respective observed variables as presented in Figure 1 above, in section 5 (Coffman & MacCallum, 2005; Von der Heidt & Scott, 2007).

Type of Research Design: Since the study aimed at determining the cause-effect relationship between exogenous construct and endogenous construct, a cross-sectional survey was used. The design enabled the researchers to collect data at one point in time and from many study cases or units of inquiry

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(Burns & Bush, 2002). Furthermore, the design was selected because it enabled to collect large amount of data from a sizeable population in a highly economical way (Hair, et al., 2003). Besides, the study was limited to service organizations that were known to have practiced BPR in varying degrees and experience. In controlling the effect of intervening variables, the study used standardized regression coefficient. The standardized regression coefficient has been used because even if the ignored variables (intervening variables) are considered in the analysis, they will not change the standardized regression coefficient of a predictor on a criterion (Kline, 2011).

Constructs and Operationalization of Constructs: Prior to designing data collection questionnaire, operationalization of research constructs is deemed very important (Ndunguru, 2007). The operationalization enabled to describe and define research variables on which data were collected; pose specific item questions that measured the research constructs that cannot be measured directly (Hair, et al., 2003). Table 1 summarizes the study operationalization process adopted in this study.

Table 1: Operationalization of constructs

Construct	Operationalization
Renovation (Ren)	It refers to the degree to which employees are encouraged to be trusted and confidentThe construct was measured using the following items: - removing non-value adding activities (Magutu, et al., 2010; Terziovski, et al., 2002; Al-Mashara, et al., 2001), replacing old machines, improvement of front and back offices (Terziovski, et al., 2002), keep clear gangways and allocation of offices in an organization
Automation (Auto)	The construct was measured using the following items: - level of use of IT (Terziovski, et al., 2002), easy of locating customers detail and IT infrastructures (Terziovski, et al., 2002; He, 2005)
Networking (Net)	The construct was measured using the following items: - easy of commutation (Al-Mashara, et al., 2001; He, 2005), accessibility of organizational information (He, 2005) and linking managers to different sections (He, 2005)
Service Quality (Qua)	The construct was measured using the following items: - ability to deliver a promised service in accurate manner, Willingness to help customers and provide prompt services, ability to inspire trust and confidence, improvement in physical elements of service such as facilities and equipments and treating customers as individuals (Parasuraman, et al., 1988; Al-Mashara, et al, 2001; Terziovski, et al., 2002)
Delivering Speed (Spe)	The construct was measured using the following items: - shortening of cycle time to serve a customer, reduction of delays in serving customer, fastness of communication, fastness in decision making and the period taken to deliver a service since its request (Al-Mashara, et al, 2001)

Study Area: The study area was Dar es Salaam city - Tanzania. The Dar es Salaam city was been selected because it is a major commercial city of Tanzania with majority of service organizations having head offices. The Dar es Salaam city enabled the researchers to collect enough data for the study while minimizing collection costs.

The study population: The target population comprised of all service organizations in Tanzania. Furthermore, the study targeted all service organizations which have been in operations for more than two years because assessing OP for organizations with less than two years of operations is illogical (Ostgaard & Birley, 1996). However, from the collected data, it was identified that eight service organizations were established after the year 2009. These service organizations were retained for further analyses in order to

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meet the minimum sample size requirement for the study depending on the number of parameters under the study (Kline, 2005).

The sampled population included banking, public utility and pension fund sectors. Other sectors were insurance, health services, airline and communication. According to Hair, et al (2003), the identified target population took note of the study objectives and scope, access to the study cases, familiarity with the topic of interest, time-frame and resource availability. The selected sectors were considered on account of having practiced and/or experienced BPR. The units of inquiry were service organizations; however, managers were the respondents.

Sample size and sampling method: A rule of thumb dictates that if proportion of target population having characteristics of interest is $p = 0.5$ the samples size of $n = \frac{1}{e^2}$ is considered adequate provided that e is the tolerated risk for estimating the proportion (Ndunguru, 2007). In this study a 10% risk was considered acceptable and thus the 100 service organization constituted the sample size. Empirically, similar studies used sample size of 80 (Adeyemi & Aremu, 2008), 110 (He, 2005), 39 (Magutu, et al., 2008) and 70 (Altinkemer, 1998), to mention few.

Given the absence of a comprehensive sampling frame of service organizations in Tanzania, quota sampling method was used to select organizations. This non-probability method is a variant of stratified sampling that is recommended in scientific studies in the absence of comprehensive sampling frame (Ndunguru, 2007). From the purposively selected sectors, specified proportions of service organizations were purposively identified and selected from a list of organizations obtained from National Bureau of Statistics (NBS) (Saunders, et al., 2005).

From the list of organizations, physical addresses of purposively selected organizations guided the researchers to reach the sampled service organizations. In total, 95 service organizations responded to the questionnaires, being thirty (30) banking, three (3) public utility, three (3) pension fund, eighteen (18) insurance, twenty eight (28) health, seven (7) airline and six (6) telecommunication organizations.

Data Collection Methods: Data were collected by using questionnaires (5-point Likert scale) with items for each construct. The questionnaire collected categorical data which during data analysis were assumed to be interval scale data (Perry, 1998). Section managers were given questionnaires and they were asked to fill in. Questionnaires were collected on agreed dates. Upon collecting a questionnaire, it was checked for inconsistency and error.

Data analysis: The data analysis included preliminary, descriptive and inferential. Preliminary analysis was confined to response coding, data cleaning and screening, and normality testing. In addition, reliability and validity testing and factor analysis were also undertaken. Factor loadings of at least 0.30 were considered for total aggregation (Coffman & MacCallum, 2005; Pallant, 2007; Saunders, et al., 2005). In addition, univariate and multivariate outlier analysis was undertaken by assessing Z-score and Mahalanobis distance. From the results, all z – score ranged between -2.77494 and 2.20715 indicating that there was no univariate outlier in all constructs of the study as Z-score are within recommended values, between ±3 (Kline, 2005). For the case of multivariate outlier, assessment was done using Mahalanobis distance. The assessment was done as outliers may be resulted after a combination of several constructs (Kline, 2005). The entered data were found to have no multivariate outlier as p values were less than 0.001.

Furthermore, the assessment of normality indicated that, data were univariate normally distributed as all skewness indices were less than 3.0 and the kurtosis indices were less than 10.0 (Kline, 2005). In assessing multivariate analysis, the Kortosis critical ratio (c.r) values was 1.523, which is less than 1.96,

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indicating the presence multivariate normal distribution of data. Therefore, the subsequent analyses (mainly hypothesis testing) can use parametric formulas, such as Maximum Likelihood (ML) estimations as used in SEM (Tabachnick & Fidell, 2001).

Descriptive analysis was confined to computing basic statistics and frequency distributions. Both measurement model analysis and factor analysis was done, in the measurement model analysis; items that factor loaded below 0.3 were eliminated and that which loaded above 0.3 were factor analyzed to identify which items were factored out as one construct (Coffman & MacCallum, 2005). In this study items in each construct, were grouped as one component. Therefore, they were total aggregated to respective constructs (Pallant, 2007).

Inferential analysis assessed the cause-effect relationship between constructs; testing of the association, ascertaining direct and indirect effects, mediation effect and model fit and testing of hypotheses (Saunders, et al., 2005; Kline, 2005).

6. RESULTS AND FINDINGS

The results and findings of the study are presented under the headings of *profile of respondents, structural measurement model (mediation effects and model fit summary) and regression model.*

6.1 RESPONDENTS PROFILE

Table 2 presents the frequency distribution and percentage regarding sectors, respondents and BPR experience of organizations studied

Table 2: Respondent Profile

S/N	Item	Categories	Number of Respondents	Percentage
1	Sector of the organization	Banking	30	31.6
		Health	28	29.5
		Insurance	18	18.9
		Public utility	3	3.2
		Communication	6	6.3
		Pension fund	3	3.2
		Airline	7	7.4
		Total	95	100
2	Working section of the respondent	Operations	27	28.4
		Finance	13	13.7
		Marketing	9	9.5
		Quality	1	1.1
		Human resource	37	38.9
		General manager	8	8.4
		Total	95	100
3	Experience in practising BPR	Less 2 years	8	8.4

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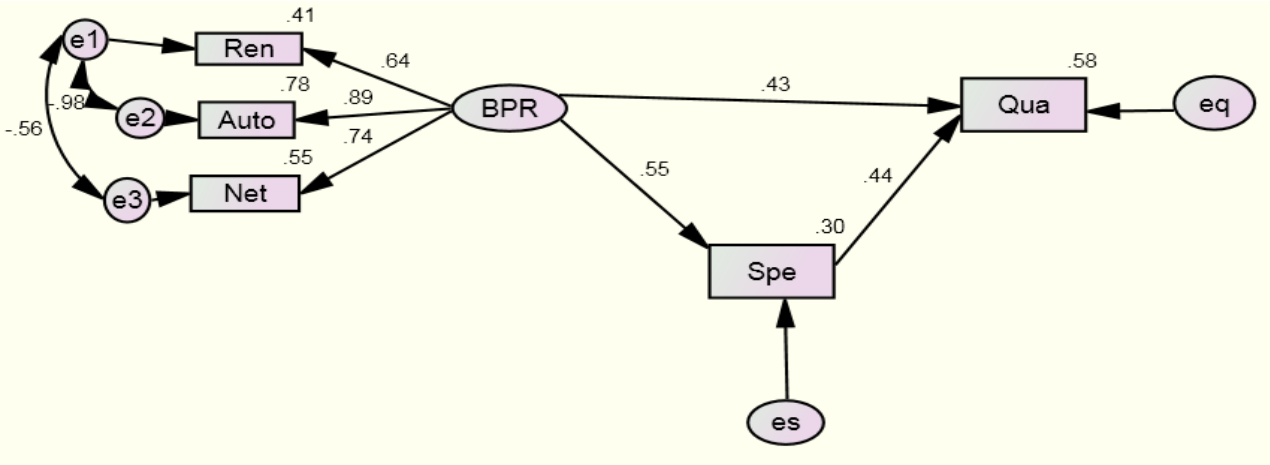
S/N	Item	Categories	Number of Respondents	Percentage
		Between 2 and 6 years	23	24.2
		Between 7 and 10 years	28	29.5
		More than 10 years	36	37.9
		Total	95	100

Over representation of banking (31.6%), health (29.5%) and insurance (18.9%) sectors does not mean that in Tanzania there are more banks, health service organizations and insurance companies. The over representation followed purposive selection of organizations. More of these organizations are involved due to the evidence from literature review that more of these organizations have adopted the BPR technique (Terziovski, et al., 2002; Shin, 2002; He, 2005; Adeyemi & Aremu, 2008, Minyan & Tongjan, 2009; Xiaoli, 2011). In this study majority of responds belong in operations (28.4%) and human resource (38.9%) sections. More are from these two sections because in most of the organizations, operations sections are ones knowledgeable about business processes. In the other hand, more human resource managers responded in this study because this is the section which is responsible for providing organizational information to external people. Regarding experience, BPR practice is not a new feature in the management of service organizations in Tanzania. This is evidenced by findings of the study that majority (67.4%) of service organizations have adopted BPR technique for over seven (7) years.

6.2 STRUCTURAL MEASUREMENT REGRESSION MODEL

The model show diagrammatical relationship between BPR (with its indicators), delivering speed and service quality. Furthermore, the model show error terms that take account for non considered factors that may have effect on service quality. The model is presented below in Figure 2.

Figure 2: The model - Relationship between BPR, delivering speed and service quality



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From the Figure 2, the factor loading of *renovation (Ren), Automation (Auto), and Networking (Net)* are above 0.3. This indicates that the items are good measures of BPR construct. From the Figure 2, the results show that 1 standard deviation increase in BPR improves service quality by 0.43 standard deviation. Through the indirect effect, 1 standard deviation of BPR improves delivering speed by 0.55 standard deviation, which in turn 1 standard deviation increases in delivering speed improves service quality by 0.44. In comparison, the indirect effect of BPR to service quality is slightly higher than that of direct effect. Since the model considers only on standard estimated, the effects of error terms are insignificant. The parameter that appear just above the observed variable show how data deviates from the mean in each observed variable.

6.3 INDIRECT EFFECT AND THE SIGNIFICANCE IF THE MEDIATION EFFECT

Figure 2, show that there is indirect relationship between BPR and service quality via delivering speed. The results of indirect relationship are presented in Table 3.

Table 3: Indirect effect among constructs of the model

S/N	Constructs under assessment	Indirect effect
1	BPR and Qua	0.242
2	Spe and Qua	0.000

From the results presented in Table 3, the indirect effect of BPR on service quality was found to be 0.242. The indirect effect suggests that 1 standard deviation of BPR, indirectly improves service quality by 0.242 standard deviations. The indirect effect of BPR on service quality was significant ($p < 0.05$) with SOBEL statistic of 3.534 (Preacher & Hayes, 2004). Table 4 summarizes the SOBEL test results.

Table 4: SOBEL test of the model

		P value	
Constructs under mediation	**SOBEL test Statistic**	**One tailed**	**Two-tailed**
BPR→Spe→Qua	3.534	0.00020	0.00041

6.4 MODEL GOODNESS OF FIT

This section presents different indices that have been used to assess the model goodness of fit. The indices assessed include GFI, AGFI, NFI, RFI, IFI, TLI, CFI and RMSEA as presented in Table 5 below.

Table 5: Goodness of fit of model

Model	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
Default model	0.990	0.925	0.986	0.932	0.998	0.988	0.998	0.047
Saturated model	1.000		1.000		1.000		1.000	
Independence model	2.062	0.286	0.000	0.000	0.000	0.000	0.000	0.422
Recommended values: AGFI, NFI, RFI, IFI, TLI and CFI should be close to 1 and 0 ≤ RMSEA ≤ 0.1 (Hooper, et al., 2008; Kline, 2005)								

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The results in Table 5 indicate that the model goodness of fit is very good. The model fit is very good because all the indexes are close to 1 and that of RMSEA fall in the recommended ranges. The results indicates that the there is insignificant error in measuring the endogenous variables.

6.5 CORRELATION AND REGRESSION ANALYSIS

The section presents the results of correlation and regression analysis. The analyses are based on the assessments of hypotheses 1 and 2 (that made up Figure 1 of the study).

6.5.1 CORRELATION ANALYSIS

The section presents the findings of assessing the correlation between BPR, service quality and delivering speed as presented in Table 6.

Table 6: Correlation coefficients between constructs of the model (Coefficient of determination)

Pearson correlations	BPR	Spe	Qua
BPR	1.00		
Spe	0.56 (0.314)	1.00	
Qua	0.667 (0.445)	0.675 (0.456)	1.00

From the results in Table 6, the correlations between constructs were significant as $r > 0.164$ and $p < 0.05$ (Price, 2000). Therefore, there is significant positive association between constructs. Of the variation between exogenous and the endogenous constructs, 44.49% of variation of service quality is explained by BPR and 45.46% of variation of service quality was explained by delivering speed. The other percentage of variation of service quality is explained by error term (eq) or measurement errors.

6.5.2 REGRESSION ANALYSIS

The further analysis in evaluating the direction, regression weight and significance of the relationship between the predictors and criterions were done. The analysis was done by assessing regression weights and p values among constructs. The regression weights are presented in Table 7 below.

Table 7: Regression weights of the model

S/N	Regressed constructs	Unstandardized regression weight	S.E	P Value	Standardized regression weight
1	Qua<--- BPR	0.292	0.071	< 0.0001	0.425
2	Spe<--- BPR	0.434	0.085	< 0.0001	0.546
3	Qua<--- Spe	0.382	0.078	< 0.0001	0.443

From the results presented in Table 7 above, regression weights were positive and significant. This indicating that 1 standard deviation of BPR improves 0.425 standard deviation of service quality holding the effect of delivering speed constant. In holding BPR constant, 1 standard deviation of delivering speed improves service quality by 0.443. However, the standard effect of BPR and delivering speed on service quality will not significantly change even if both BPR and delivering speed are considered at the same time. The approximate mathematical relationship between constructs is presented in equation 2 below.

$$\hat{Qua} = 0.425BPR + 0.443Spe \quad \text{----------} \quad (2)$$

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6.5.3 TESTING OF HYPOTHESIS

The testing of hypotheses was done by evaluating the regression coefficients (β_i) and their p value of the as presented in Table 7. From the results, $\beta_1 \neq 0$ *and* $\beta_2 \neq 0$, this leads at rejecting null hypotheses one (H_{01}) and two (H_{02}) at $p < 0.05$ and accepting alternative hypotheses one (H_{a1}) and two (H_{a2}). Therefore, BPR has significant positive correlation with service quality, and delivering speed has significant positive correlation with service quality, respectively.

7. DISCUSSION AND CONCLUSION

The main purpose of the study was to assess the effects of BPR and delivering speed on service industry. In assessing the effect of BPR on service quality both direct and indirect effect was tested. The direct effects of BPR on service quality and that of delivering speed on service quality was hypothesized by hypotheses one and two. The hypotheses are presented and discussed as follows:-

H_1: BPR has significant positive correlation with service quality in service organizations. Based on the findings of the study, hypothesis one was supported (The null hypothesis was rejected). It was found that BPR has significant positive correlation with service quality. The finding of the study supports that of Hammer (1990), Lazano (1992) as cited in Mothobi (2002) Jones, et al (1997), Covert (1997) and Chenghu (2007). Not only that the finding is in line with theory stipulated by Slack, et al (2007) and Hammer & Champy (1993) that BPR improves service quality. In this case, the finding is supported by literature. Of the service quality variation, 44.49% is caused by BPR.

H_2: Delivering speed has significant positive correlation with service quality in service organizations. Based on the findings of the study, hypothesis two was supported too (The null hypothesis was rejected). It was found that delivering speed has significant positive correlation with service quality. This finding supports that of Hammer (1990), Covert (1997) and Chenghu (2007). Furthermore, the findings are in line with the theory stipulated by Hammer & Champy (1993) that delivering speed improves service quality. In this case, the finding is supported by the literature. Of the service quality variation, 45.56% is caused by delivering speed.

Furthermore, from the findings, it was identified that BPR improves service quality through the mediation of delivering speed. Meaning that, BPR affects delivering speed which in turn affects service quality. The findings are similar to those revealed by Jones, et al (1997) and Al-Mashara, et al., (2001). The significance of the mediation effected was tested using the SOBEL test. From the results of the SOBEL test, the mediation effect was found to be significant. From the findings and discussion it was concluded that BPR improves both service quality and delivering speed in service organizations. The BPR technique improves service quality directly and indirectly. The indirect improvement of the service quality occurs through the mediation of delivering speed. Meaning that, BPR improves delivering speed which in turn improves service quality in service organizations. The effect of BPR is presented in equation (2). Therefore, service organizations should adopt the BPR technique in order to improve business processes that will provide delighting services to customers.

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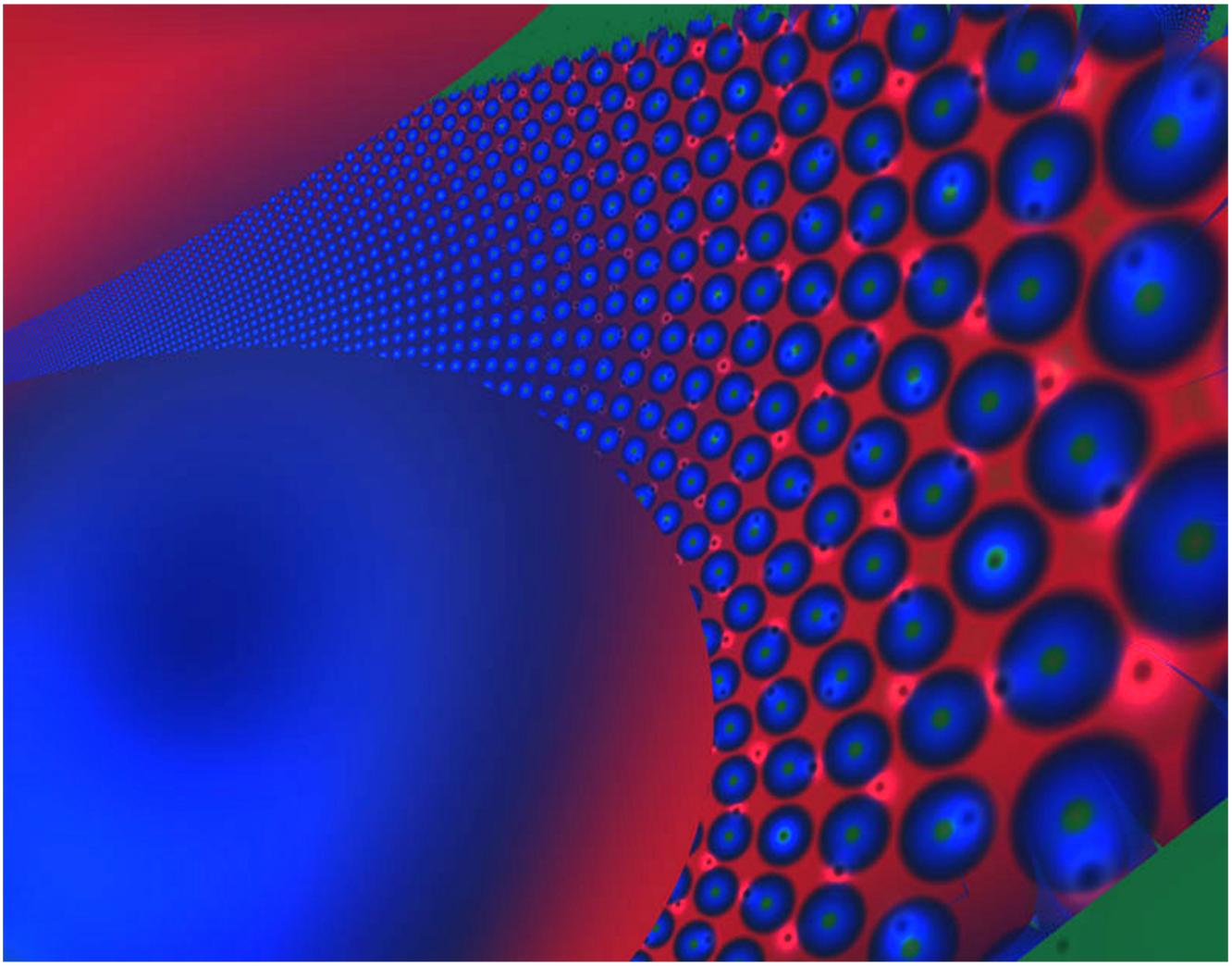

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