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BUSINESS PROCESS RE-ENGINEERING: THE TECHNIQUE TO IMPROVE DELIVERING SPEED OF SERVICE INDUSTRY IN TANZANIA

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ABSTRACT

Problem statement: Time spent by customers at a service organization is very critical in today's business environment. Service organizations must change in order to provide services to customers within minimum time possible. Business process re-engineering is one a technique that improves business processes. However, despite documented advantages, most organizations have not adopted the technique. **Purpose:** The paper aims at determining and explaining the effect of business process re-engineering on delivering speed for enhanced organizational performance. **Methodology:** The study used cross-sectional survey design that included a sample with ninety five (95) service organizations. Focused intensive literature review enabled to construct structural measurement model, formulation of testable hypothesis and operationalization of constructs. **Results:** From the study, it is revealed that BPR positively improves delivering speed of service organizations. **Conclusion:** The adoption of BPR technique for improved business processes enhances delivering speed in service organizations.

Keywords: Business Process Re-engineering, Delivering Speed, Service Organization.

1. BACKGROUND

Today's organizations are generically different in design compared to some years back. Organizations have been changing from time to time due to changes in technology and customers' demands (HAMMER & CHAMPY, 1993; BROERSMA, 1997; HESSON, 2007; BANHAM, 2010). The advancement in new technology forces organizations to modernize their processes, thereby fostering their competitive advantages (LAUDON & LAUDON, 2006). Also, the customers' demands have been the factor that causes organization to change. Organizational failure to meet customers' demand and/or expectations forces customers to shift to other service providers (HEIZER & RENDER, 2011). Therefore, organizations have been working hard to improve their business processes in order to improve or maintain their services for retaining and/or attracting more customers.

In this regard, organizations have to re-invent their business processes. There are several techniques that can be used by organizations to reinvent their business processes. The techniques include Six Sigma, Lean, Total Quality Management (TQM) and Business Process Re-engineering (BPR), to mention the few (SLACK, et al., 2007). Among these techniques, BPR is considered as the most appropriate in today's business environment because it improves organizational performance (OP) (HAMMER & CHAMPY, 1993).

BPR was introduced in early 1990, earlier in private business sector and later in the public business sector to help organizations improve OP (JOHANSSON, et al., 1993). In U.S, BPR was introduced in nineteenth century when division of labour didn't work anymore. Thus, BPR substituted division of labour approach to business operations. In many countries, organizations adopted BPR technique in order to improve business processes for improved OP; often through reduced cost, improved quality and customer services. The other dimensions of OP that are associated with BPR are speed, process efficiency, effectiveness and productivity (HAMMER & CHAMPY 1993; CARTER, 1995; MUTHU, et al., 1999).

According to Adeyemi and Aremu (2008), BPR became useful weapon for organizations that seek improvement in current OP. For instance, mechanizing business processes removes and/or combines some business processes hitherto

done by workers, and the net effect is reduced number of employees and reduced operational costs (MAUREEN, et al., 1995; HARTIGH & SEGVELD, 2011; WÖLFL, 2011; GUMMESSON, 1998).

BPR technique focuses on how work is organized presently, not how it had been done for the past years, given the today's technologies and demand of customers (BROERSMA, 1997; HESSON, 2007; BANHAM, 2010). Furthermore, the today's competitive environment compels organizations to re-engineer their business processes to effect perfect service delivering for customer satisfaction (MOTHOB, 2002). For sure, discovery of the BPR technique has been of great importance to organizations.

Before the emergency of BPR, organizations divided works into small and simple tasks. This led the structure of organizations becoming functional in order to manage the divided works. The functional structures later encountered operational problems, especially when local competitive environment changed beyond what could be recognized (CHEN, 2001). The operational problems, mainly planning and budgeting, ultimately led to the end of the division of works and/or labour strategy. It forced organizations to look for other strategies that will enable them to improve their OP.

In addition to the operational problems, present organizations face competition from the global business environment and the complexity of customers' tastes. While technological advancement logically leads to competitive global business, awareness and education on consumerism leads to complexity of customers' tastes. Therefore, organizations are forced to improve their business processes in order to cope with business competition while meeting customers' demands, need and desire (HEIZER & RENDER, 2011; HAMMER, 1990; LAUDON & LAUDON, 2006).

Service organizations play an important role in both social and economic development of a country. For instance, service industry in Tanzania accounts for about 50% in GDP (CIA, 2013). Therefore, the growth and sustainability of service industry is vital since it has significance contribution to economy. Due to the nature of business processes and the demand of customers, service organizations are labour intensive compared to manufacturing organizations (LEVITT, 1981). In that case, a proper re-engineering of business processes in service industry need to be

undertaken in order to reduce labour costs for improved OP such as timely service delivery to customers., service quality and reduction operational cost (XIAOLI, 2011).

In reducing operational costs and improving delivering speed, BPR supports the linking of customers with service organizations through improving business processes; often by adjusting, combining and networking business processes (HESSON, 2007). The contribution of BPR in increased/improved productivity and service quality and in lowered operational cost and cycle time is on the rise for many organizations (COVERT, 1997; ADEYEMI & AREMU, 2008; XIAOLI, 2011). Thus, BPR brings customer satisfaction and strengthen the domestic and international market competition among service organizations.

2. PROBLEM STATEMENT

According to Al-Mashara, et al (2001), most organizations, knowingly or otherwise, are involved in BPR. The pressure for survival in the market and the need to prevent complacency has prompted them to adapt BPR technique. Also, the motivation of adapting BPR technique comes from the desire of organizations to close competitive gaps and achieving superior performance standards.

Despite the potentiality and popularity of BPR, organizations adopt the technique in an ad-hoc manner. Furthermore, the mixed performance outcomes for organizations that have implemented BPR prompts to conclude that there is still a gap in knowledge regarding the influence of BPR on delivering speed (O'NEILL & SOHAL, 1999). Therefore, the main objective of the current paper is to assess and explain the effect of BPR on delivering speed of service organizations in Tanzania.

More specifically, the current paper aims at assessing the influence of BPR on delivering speed in service organizations. The research question to be answered is; what is the effect of BPR on delivering speed in service organizations? The tentative answer to this probing question in form of a null hypothesis to be tested is:

Ho1: BPR has no correlation with delivering speed in service organizations.

3. LITERATURE REVIEW

3.1. Business Process Re-engineering

Business process re-engineering is a process design, process management, and process innovation. Re-engineering involves revising organizational processes. That

means, designing the core business process instead of analyzing the current one. It involves re-configuration of works to serve customers better. Re-engineering forces organizations to challenge the way they run and redesign organizations around the desired outcomes rather than functions or departments. It also forces a new way of thinking (ATTARAN, 2004).

BPR is a technique about dramatic process improvement. According to Chen (2001), BPR is known by many names, such as, core process redesign, new industrial engineering and working smarter. All of them imply the same concept which focuses 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*.

In any organization, business processes are characterized by three elements: inputs (data, such as customer inquiries or materials), processes (where customers or materials go through several stages which may be time and money consuming) and output (delivery of expected results). In this system, a problematic part is processing of what is required by a customer. To deliver what is required by customers on time, organizations need to perfect their business processes. In this case, BPR is the technique that can be used to perfect the business processes. In the intervention, 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). According to Sherwood-Smith (1994) as quoted in Chen (2001), 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.

3.2. Activities of Business Process Re-engineering

From literature review, it has been identified that, BPR entails activities of business processes renovation, automation and networking. The activities of BPR 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-value adding 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; MILE, 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 from the database, facilitation of information flow and programming a device or machine to function without frequent interaction of an operator (MILE, 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 and 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 (HE, 2005) 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), the computerization is the use of IT in order to network the renovated business processes. The computerization involves the networking different sections and machines. However, the networking involves the linking different sections or machines which have been re-engineered. The linking involves the enabling communication, access to information and connects managers to different sections (CHEN, 2001; AL-MASHARA, et al., 2001; HE, 2005).

3.3. Delivering speed

Speed is an element of timeliness (MAGUTU, et al., 2010). Speed is a competitive dimension that enables one to make the desired product or provide a service very quickly. OP is improved when the duration taken for a customer to receive a product/service since the requisition has been minimized/shortened (JONES, et al., 1997; CONVERT, 1997; SLACK, et al., 2007). Customers can judge the organizational service as good or bad depending on the time spent during consuming a service at an organization. In this regard, organizations have to make sure that their business processes are effective enough in order to provide services that delight their customers.

3.4. Business process re-engineering and delivering speed

From literature review, it has been identified that BPR is the technique that enables organizations to improve business processes. The improved business processes facilitated organizations to minimize the time taken to service a customer (SLACK, et al., 2007; HEIZER & RENDER, 2011). By so doing, BPR enables the

service organization to improve its service delivering speed (CONVERT, 1997; ATTARAN & WOOD, 1999; GUNASEKARAN, et al., 2000).

In improving service delivering speed, BPR plays important roles of making succession or continuity of progression of work activities (SHIN & JEMELLA; DEBELA, 2009), automating business processes (HAMMER, 1990; LAUDON & LAUDON; 2006), keeping the sections with high to-from movement close (AL-MASHARA, et al., 2001; TERZIOVSKI, et al., 2002; MAGUTU, et al., 2010), linking different section which are far apart (ZYGIARIS, 2000) and facilitating the communication between employees or employees and customers (AL-MASHARA, et al., 2001; ATTARAN, 2004; HE, 2005).

In any BPR project, technology plays an important role in supporting BPR. Among other roles, technology allows the rapid development of various ready-to use best-practice templates that suits most needed business processes, automate business processes, linking section and facilitates the smooth flow of information between sections to mention few. 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 (SUNGAU & MSANJILA, 2012).

Furthermore, BPR improves service quality via delivering speed, such that BPR improves delivering speed (JONES, et al., 1997; SLACK, et al., 2007) 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 (AL-MASHARA, et al., 2001).

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

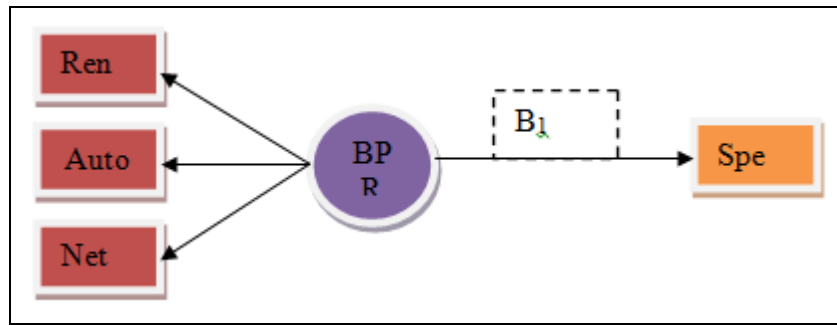


Figure 1: Conceptual framework

Source: Literature review

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

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

One null hypothesis was considered relevant for this study; H_{01} : *BPR has no correlation with delivering speed in service organizations*. The corresponding statistical or operational null and alternative hypothesis was:

$$H_{01} : \beta_1 = 0 \quad H_{a1} : \beta_1 \neq 0$$

4. METHODOLOGY

4.1. Justification of paradigm and methodology: This study has used a positivist paradigm in order to generate hypothesis that are empirically tested. In this study, firstly, intensive literature review was undertaken in order to narrow the gap between the conceptual and research languages (NDUNGURU, 2007). The second step was to collect and analyze data from survey. Thirdly, the structural equation modeling of the surveyed data was formulated with both observable and unobservable construct to study the interdependence of constructs. The constructs were studied by using multi – items scales which were total aggregated to observed and latent constructs (COFFMAN & MACCALLUM, 2005; VON DER HEIDT & SCOTT, 2007).

4.2. Type of Research Design: Since the study aimed at determining the cause-effect relationship between exogenous construct and endogenous construct, therefore, a cross-sectional survey design was used. The design enabled the researchers to collect data at one point in time from many study cases or units of inquiry (BURNS & BUSH, 2002). Furthermore the design was selected because it enabled the researchers 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 experiences. 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).

- 4.3. Constructs and Operationalization of Constructs:** Prior to designing the data collection questionnaire, the operationalization of research constructs was very important (NDUNGURU, 2007). The operationalization of constructs enabled to describe and define research construct on which data were collected and 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)	The construct was measured using the following items: - removing non-value adding activities (MAGUTU, et al., 2010; MILE, et al., 2002; AL-MASHARA, et al., 2001), replacing old machines, improvement of front and back offices (MILE, 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 (MILE, et al., 2002), easy of locating customers detail and IT infrastructures (MILE, 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 and linking managers to different sections (HE, 2005)
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)

Source: Constructed from literature review

- 4.4. Study Area:** The study area was Dar es Salaam city - Tanzania. The Dar es Salaam city was selected because it is a major commercial city of Tanzania having head offices.. The Dar es Salaam city enabled the researchers to collect enough data for the study while minimizing data collection costs.
- 4.5. 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 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.

- 4.6. 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.

4.7. 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.

4.8. 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, 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 and factor analyses were 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 effect and model fit and testing of hypotheses (SAUNDERS, et al., 2005; KLINE, 2005).

5. RESULTS AND FINDINGS

The results and findings of the study are presented under the headings of profile of respondents, structural measurement model and regression model.

5.1. Respondents Profile

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

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 and insurance organizations. The over representation followed purposive selection of organizations. More of these organizations are involved due to the evidence from literature review that more of them 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 organizations, operations sections are ones knowledgeable about business processes. In the other hand, more human resource managers responded in this study because it 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.

Table 2: Respondent Profile

Item	Categories	Number of Respondents	Perc centage
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
Working section of the respondent resource manager	Operations	27	28.4
	Finance	13	13.7
	Marketing	9	9.5
	Quality	1	1.1
	Human	37	38.9
	General	8	8.4
	Total	95	100
Experience in practising BPR	Less 2 years	8	8.4
	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

Source: Analysis of field data, 2012

5.2. Structural measurement regression model

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

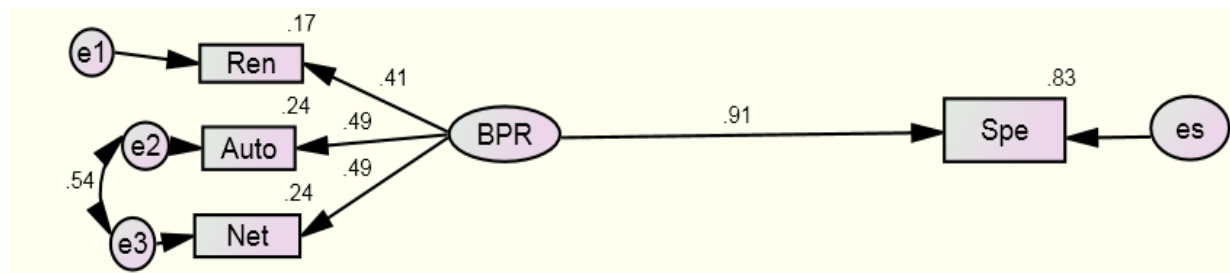


Figure 2: The model 1- Relationship between BPR and delivering speed
Source: Analysis of field data, 2012

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 delivering speed by 0.91 standard deviation. Since the model considers only standard estimates, 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.

5.3. 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 3 below.

Table 3: Goodness of fit of model 1

Model	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	RMSEA
Default model	0.999	0.992	0.998	0.990	1.009	1.058	1.000	0.000
Saturated model	1.000		1.000		1.000		1.000	
Independence model	0.656	0.427	0.000	0.000	0.000	0.000	0.000	0.393

Recommended values: AGFI, NFI, RFI, IFI, TLI and CFI should be close to 1 and $0 \leq \text{RMSEA} \leq 0.1$ (HOOPER, ET AL., 2008; KLINE, 2005)

Source: Analysis of field data, 2012

The results in Table 3 indicate that the model goodness of fit is very good as most indexes are close to 1 and that of RMSEA falls in the recommended range. The findings based on these results are that the research constructs are acceptable for scientific work.

5.4. Correlation and regression analyses

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

5.4.1. Correlation analysis

Table 4 is a correlation matrix of the key constructs, BPR and delivering speed.

Table 4: Correlation matrix		
<i>Pearson correlations</i>	BPR	Spe
BPR	1.00	
Spe	0.912	1.00

Source: Analysis of field data, 2012

From the results in Table 4, the correlation between BPR and delivering speed is 0.912, which is significant at $p < 0.05$ (PRICE, 2000). The total variation of delivering speed explained by BPR is 83.7% (0.912^2). Therefore, adopting BPR technique improves delivering speed in service organizations considered in this study.

5.4.2. Regression analysis

Table 5 presents the results of regression analysis.

Table 5: Regression weights of model 1

Regressed variables	Unstandardized regression weight	S.E	P Value	Standardized regression weight
Spe<--- BPR	1.102	0.458	0.016	.912

Source: Analysis of field data, 2012

From the results presented in Table 5 above, regression weights are positive and significant; indicating that BPR is an important determining factor of delivering speed in service organizations studied. The estimated relationship between BPR and delivering speed is presented in equation 2 below.

$$\hat{Spe} = 0.912BPR \text{-----} (2)$$

5.4.3. Testing of hypothesis

The hypothesis guiding this study was: *BPR has no correlation with delivering speed in service organization* or $H_{01} : \beta_1 = 0$ in statistical form. The p value indicates that the standardized regression coefficient (β_1) is significant. This implies that the null hypothesis is rejected in favour of the alternative hypothesis. It is therefore concluded that BPR is an important factor that enhances delivering speed.

6. DISCUSSION OF FINDINGS AND CONCLUSION

6.1. Discussion of findings

The purpose of the study was to explicate the effect of BPR on delivering speed in service organizations in Tanzania. The paper provides a framework to understand the way BPR technique can be used to improve the OP. In assessing the direct effect of BPR on delivering speed, coefficient of BPR in equation (1) was tested.

Based on the findings of the study, the hypothesis was supported (the null hypothesis was rejected). In the findings, it was found that BPR has significant positive correlation with delivering speed in service organizations. The study found that BPR improves delivering speed by 83.17%. The findings are supporting the findings of Terziovski, Fitzpatrick and O'Neill (2003) which found that BPR reduces cycle time by 27%, Hall, et al. (1993) which found that BPR improves delivering speed by 44%, Yahya (2002) which found that BPR improves service delivering speed, Debela (2009) which found that BPR improves service delivering speed by 65%, Tennant and Wu (2005) which found that BPR improves speed by improving coordination and that of Champy (1995) which found that BPR improves delivery speed by decreasing cycle time by 70%. Not only that the findings are in line with theory stipulated by Slack, et al (2007) and that of Hammer and Champy (1993) that BPR improves delivering speed. In this case, the finding is supported by literature and the effect of BPR is presented in equation 2 below.

$$\hat{S}_{pe} = 0.912BPR \text{-----}(2)$$

6.2. Conclusion

The study has found that BPR improves delivering speed in service organizations. The findings are in line with the idea that BPR improves delivering speed in service organizations as identified in focused literature review. It is therefore concluded that BPR is an important technique to be adopted by service organizations to improve business processes for enhanced delivering speed, which in turn reduces time taken to service customers.. The study recommend a similar study to be done by using longitudinal design in order to study the effect of BPR on delivering speed.

REFERENCE

ADEYEMI, S. & AREMU, M.A. (2008). Impact Assessment of business process re-engineering on organizational performance. **European Journal of Social Sciences**, v. 7, n. 1.

Al-MASHARA, M.; IRAN, Z. & ZAIRI, M. (2001). Business process re-engineering: A survey of international experience. **Business Process Management Journal**, v. 7, n. 5, p. 437-455.

ATTARAN, M. (2004). Exploring the relationship between information technology and business process reengineering. **Information & Management**, v. 41, P. 585-596

BANHAM, H. C. (2010). External environmental analysis for small and medium enterprises (SMEs). **Journal of Business & Economics Research**. V. 8, n. 10, p. 19-26

BROERSMA, H. P. (1997). **A theoretical approach to business process re-engineering**. Thesis. Rand Afrikaans University. South Africa.

BURNS, A. C & BUSH, R. F. (2002). **Marketing research: Online research applications**. 4 ed. Prentice Hall, New Jersey.

CHAMPY, J. (1995). **Reengineering management**. Harper Collins. London.

CARTER, P. (1995). **Business process re-engineering**. Retrieved on 1st September 2010 from a World Wide Web:

<http://www.teamtechnology.co.uk/business-process-re-engineering.html>.

CHEN, Y. (2001). **Empirical modeling for participative business process reengineering**. Thesis. University of Warwick.

CIA. (2012). **GDP – Composition by sector**. USA. Retrieved on 4th April 2013 from World Wide Web: <https://www.cia.gov/library/publications/the-world-factbook/fields/2012.html>

COFFMAN, D. L. & MACCALLUM, R. C. (2005). Using parcels to convert path analysis models into latent variable models. **Multivariate Behavioral Research**. v. 40, n. 2, p. 235 - 259

COVERT, M. (1997). **Successfully performing business process re-engineering**, Visible Systems Corporation.

DEBELA, T. (2009). Business process reengineering in Ethiopian public organizations: The relationship between theory and practice. **JBAS**, v. 1, n. 2.

GUMMESSON, E. (1998). Productivity, quality and relationship marketing in service operations. **International Journal of Contemporary Hospitality Management**, v. 10, n. 1, p. 4–15.

GUNASEKARAN, A.; CHUNG, W. W. C. & KAN, K., (2000). Business process reengineering in British company: A case study. **Logistics Information Management**. v. 13, n. 5, p. 271-285.

HAIR, J. F.; BUSH, R. P. & ORTINAU, D. J. (2003). **Marketing research: Within a changing information environment**. 2 ed. McGraw-Hill/Irwin, New York

HALL, G.; ROSENTHAL, J. & WADE, J. (1993). How to make reengineering really work. **Harvard Business Review**. p. 119–131.

- HAMMER, M. (1990). Reengineering Work: Don't Automate, Obliterate. **Harvard Business Review**. p. 104–112.
- HAMMER, M & CHAMPY, J., (1993), **Reengineering the Corporation: A Manifesto for Business Revolution**, Harper Business, New York.
- HARTIGH, E. d. & SEGVELD, M. (2011). Service Productivity: How to measure and improve it? **Springer Science and Business Media, Research and Innovations in the Service Economy**, DOI 10.1007/978-1-4419-7904-9_11.
- HE, X. J. (2005). A comparative study of business process reengineering in China. **Communication of the IIMA**, v. 5, n. 2, p. 25–30.
- HEIZER, J. & RENDER, B. (2011). **Operations Management**, 10 ed. Printice Hall. New Jersey. U.S.A.
- HESSON, M. (2007), Business process reengineering in UAE public sector: A naturalization and residency case study, **Business Process management Journal**, v. 13, n. 5, p. 707-727.
- HOOPER, D.; COUGHLAN, J. & NULLEN, M. R. (2008). Structural equation modelling: Guideline for determining model fit. **Electronic Journal of Business Research Methods**. v. 6, n. 1, p. 53-60.
- JOHANSSON, H. J.; MCHUGH, P.; PENDLEBURY, A. J & WHEELER, W. A. (1993). **Business Process Reengineering**. Wiley, Chichester.
- JONES, T. M.; NOBLE, J. S. & CROWE, T. J. (1997). An example of the application of production system design tools for the implementation of business process re-engineering. **International Journal Production Economics**. v. 50, p. 69–78.
- KLINE, R. B. (2011). **Principles and practices of structure equation modeling**. 3 ed. The Guilford Press, New York.
- KLINE, R. B. (2005). **Principles and Practices of Structural Equation Modeling**. 2 ed. The Guilford Press, New York.
- LAUDON, K. C. & LAUDON, J. P. (2006). **Management information system: Managing the digital firm**. 10 ed). Prentice Hall, Upper Saddle River. New Jersey.
- LEVITT, T. (1981). Marketing Intangible Products and Product Intangibles. **Harvard Business Review**, v. 59, n. 3, p. 94-102.
- MAGUTU, P. O.; NYAMWANGE, S. O. & KAPTOGE, G. K. (2010). Business process reengineering for competitive advantage: Key factors that may lead to the success or failure of the BPR implementation (The Wrigley Company), **African Journal of Business & Management**, v. 1, p. 135-150
- MAUREEN, W.; CHU, W.W.; LIN, W, C. & YU, D. (1995). **Business process re-engineering, analysis and recommendations**. Planning Review. Baruch College, City University of New York. 22.
- MILE, T.; TITZPATRICK, P. & O'NEILL, P. (2002). **Successful predictors of Business process Reengineering (BPR) in financial services**.
- MOTHOB, M. (2002). **Business process re-engineering: Improving business operations**. Dissertation. The University of Wales.
- MUTHU, S.; WHITMAN, L. & CHERAGHI, H. (1999), Business Process Re-Engineering: A Consolidated Methodology, **Proceedings of The 4th Annual**

International Conference on Industrial Engineering Theory, San Antonio, Texas, USA, Retrieved on 28th December 2010, from a World Wide Web: <http://webs.twsu.edu/whitman/papers/ijii99muthu.pdf>.

NDUNGURU, P. C. (2007). **Lectures on research methods for social sciences**. Research Information and Publications Department. Mzumbe University

O'NEILL, P. & SOHAL, A. S. (1999). Business process reengineering: A review of recent Literature. **Technovation**, v. 19, p. 571 581.

OSTGAARD, T. A. and BIRLEY, S. (1996). New venture growth and personal networks. **Journal of Business Research**, v. 36, n. 1, p. 37-50.

PALLANT, J. (2007). **SPSS survival manual**: A step-by-step guide to data analysis using SPSS version 15. 3 ed. Markono Print Media Pte Ltd, Singapore.

PERRY, C. (1998). A structural approach to presenting theses: Notes for students and their supervisors. **Australian Marketing Journal**. v. 6, n. 1, p. 63-68.

SHIN, N. & JEMELLA, D. (2002). Business process re-engineering and performance improvement: The case of Chase Manhattan Bank. **Business Process Management Journal**, v. 8, n. 4, p. 351–363.

SIMON, K. A. (1994). **Towards a theoretical framework for business process re-engineering**. Thesis. Göteborg University.

SLACK, N.; CHAMBERS, S. & JOHNSTON, R. (2007). **Operation Management**. 5 ed. Prentice Hall. UK.

SUNGAU, J. & MSANJILA, S. S. (2012). On IT enabling of business process re-engineering in Organizations. **Advanced Materials research**, p. 404-408. P. 5177-5181.

TABACHNICK, B. G. and FIDELL, L. S. (2007). **Using multivariate statistics**. 5 ed. Pearson Education, Boston.

TENNANT, C. & WU, Y. (2005). Research and concepts: The application of business process reengineering in the UK. **The TQM Magazine**. v. 17, n. 6, p. 537-545

VON DER HEIDT, T. & SCOTT, D. R. (2007). **Partial aggregation for complex structural equation modeling (SEM) and small sample sizes**: An illustration using a multi-stakeholder model of cooperative interorganisational relationships (IORs) in product innovation. 21st ANZAM Conference, Sydney.

WÖLFL, A. (2011). **Productivity growth in service industries: An assessment of recent patterns and the role of measurement**. Economic Analysis and Statistics Division, OECD Publications, Paris.

XIAOLI, L. (2011). Correlation between business process reengineering and operation performance of National Commercial Banks. **Journal of Innovation and Management**, n. 7. P. 981-985.

ZYGIARIS, S. (2000). **Business process reengineering BPR**: Report produced for the EC funded project, INNOREGIO: dissemination of Innovation and knowledge management techniques, HELLAS SA.