Journal of Economics and Behavioral Studies (ISSN: 2220-6140)
Vol. 11, No. 2, pp. 79-91, April 2019

Enhanced Customer Interactions through Customer-Centric Technology within a Call Centre

Devina Oodith
University of KwaZulu-Natal (Westville Campus), Durban, South Africa
oodithd@ukzn.ac.za

Abstract: Customer call centres have become a critical form of service delivery for many organisations hence technological innovations serve as a critical point of contact between the organisation and its customers and can assist in raising the stakes in businesses in terms of customer service delivery (Burgess & Connell, 2004). According to the 2017 Global Customer Experience Benchmarking Report technology has been the number one enabler to positively enhance customer service experience in the last 5 years (Business Tech, 2017). Customers have become so empowered that they expect to have flexibility to contact a business however they choose; either via a telephone, email or Facebook. The key to ensuring satisfaction though is system's efficiency and ease of use. This study was undertaken in EThekwini (Durban), South Africa and was directed within a Public Sector service environment comprising of four major call centres employing a total of 240 call centre agents. Using simple random sampling, 220 customers were drawn from all consumers subscribing to e-billing in EThekwini (Durban). Data for the customer sample was collected using a precoded, self-developed questionnaire whose psychometric properties were statistically determined. Data was analyzed using descriptive and inferential statistics. The results specify that in terms of customers' perceptions of the influence of technology, on call centre effectiveness the majority of the customers found it challenging to use the technology and to understand the self-help options that were provided to them by the call centre. There were problems encountered with logging in customer queries and complaints and most customers were dissatisfied with their overall customer experience. Based on the results of the study recommendations have been made to manage the interactions between the customers and call centre's more proficiently and powerfully.

Keywords: *Systems efficiency, ease of use, clarity and understanding of technology.*

1. Introduction

In the absence of the traditional servicescape and while waiting on the phone for their call to be answered, customers only have access to their audio senses (Whiting & Donthu, 2006). During this time most of the customers are likely to experience anger and frustration coupled with boredom as they are compelled to deal with inadequate menu options, delays in waiting for agents, coping with aggravating music while waiting, fragmented human contact by numerous call centre agents; usually asking for basic information to be repeated; which often leads to failed calls, and results in repeat journeys through this tedious cycle due to failed service encounters (Beirre et al., 2004, p100). The objectives and importance of this paper is to assess the effectiveness of customer interactions within the call centre through customer-centric technology. In particular it explores the extent to which the systems that are available to assist customers are efficient in handling queries and complaints (systems efficiency); whether these systems are simple to use and understand by the customers that have to interface and navigate through them (ease of use) and attempts to address whether the instructions and menu options presented to customers are clear and concise (clarity and understanding). The telephone call centres are becoming increasingly popular in the service sector. Thus low-cost telecommunications and computer software have been implemented across the finance, banking, insurance and customer support sectors and towards customer call centres as the primary mode of service delivery (Ellis & Taylor, 2006). More recently there have been increases in internet only financial service providers in a bid to benefit from lower costs that have been incurred than from the traditional pressures of the call centre with the additional overheads across the firm; and the heightened dependency on call centre agents (Dixon, 2002; Piercy & Rich, 2008).

Systems Efficiency: Information systems and information technology (IS/IT) has been recognised as a core competitive and strategic competency for many organisations (Bendoly et al., 2009; Cheng et al., 2011). Even though IS/IT plays a pivotal role within the organisation the actual effectiveness of its utilisation is important to deliberate upon. Many service managers today are employing several strategies which focus on delivering

integrated services using real-time applications to customers (Geum et al., 2011). In this regard service delivery utilises a range of offerings which include competencies such as automation, zero touch, self-managed, agile and real-time customer offerings (Ojiako, 2012).

Some scholars such as Venkatesh and Agarwal (2006) believe that IS/IT is essential to the delivery of the customer experience. According to Ojiako (2012), the interactions between customers and service providers are also being impacted by advances in IS/IT which enables standardisation and the potential for cost reduction for the service provider. Service providers are now being driven to provide innovative services and more self-managed customer interactions (Gelderman et al., 2011; Lin & Hsieh, 2011). The last decade has seen greater adoption of mobile technology and self-service technologies (SST's) in order to create cost savings (Lavin & Maynard, 2001). However recent studies have revealed great frustrations and difficulties being experienced by customers with the SST models being implemented by businesses (Reinders et al., 2008; Robertson & Shaw, 2009). The type of service support needed by the customer has been found to be critical in terms of the service encounter. Lu et al. (2009) and Mattila et al. (2011) found that the desire to use SST's is influenced by the customer's sense of personal capacity to engage with the SST. Hence the greater the perceived risk of the transaction the greater the likelihood that the customer will seek the assistance of a call centre agent rather than engage with technology. Makarem et al. (2009) found that a good IS/IT-enabled service process did not have as much positive impact as the traditional good "human contact" in terms of the perception of overall customer satisfaction.

Ease of Use: There are many prospects for self-service suggesting that provider motivation and customer benefits can grow this mode of business (Hsieh, 2005). Customers will be more accommodating of this mode as a result of increased opportunity for customization, accuracy, convenience and speed. According to Fitzsimmons & Fitzsimmons (2006), due to the increase in the cost of human labour, inroads have been created for self-service technology (SST). The advent of this technology will see an end to low wage, unskilled, non-value-added service jobs. The firm has the advantage of serving more customers with fewer resources; thus, reducing costs while the customer has the ability to customise a product or service for personal use at a time convenient for the customer (Borck, 2004; Hsieh, 2005; Malgeri, 2007; Ruyter et al., 2000). Hsieh (2005) identified three primary goals that firms may strive towards by entering the self-service arena. They firstly strive to enhance the customer's service by assisting customers with queries without tying up the firm's human resources. Indeed if this is executed correctly, it has the potential to save the firm money (Malgeri, 2007). Secondly, the firm can enable direct transactions such as customer orders and exchanges without any direct interaction with an employee. Finally, through online educational guidance customers can train themselves to use the site.

Hsieh (2005) identified the following factors that can affect the adoption and use of self-service technology:

- Quality of products
- Services offered by the firm
- Cost of the product
- Presentation of services
- Design of self-service technology
- The self-service technology's ability for service recovery
- Promotion of self-service technology
- The way the firm manages and prevents self-service technology failure
- Alternative uses for the same service (competitors)
- The firm's ability to keep the self-service technology updated and to improve it continuously

Girman, Keusch & Kmec (2009) undertook a study on the use of vending machines within a University campus environment and attempted to track the number of faults that were experienced by the users of these machines. They found that although no official complaints were lodged with the service provider, regular inspections carried out by maintenance crew detected faults with some of the machines. They also investigated the use of pay phones that worked with coins and prepaid cards and again discovered that these phones did have defects present, although no official complaints were received. Girman, Keusch & Kmec

(2009) highlighted the importance of periodic checks as long as complaint rates were low, in order to maintain a level of service quality when firms embrace self-service technology. The service provider must conduct these checks because minor failures may not always be reported but can dissuade first-time users from using self-service technology in the future.

Internet Services: E-business came about as a result of a convergence of several technologies. A website can serve altered purposes for diverse businesses. According to Metters et al. (2006), reports indicate a decline in customer satisfaction with most services. Customers grow irate with automated phone systems and a host of new terminology encountered during internet encounters. As a result, many customers encounter long waiting times with e-mail queries and misunderstandings arise as a result of e-mails. Metters et al. (2006) propose that a service company must question the importance of their Internet presence by asking the following questions: Will customers buy anything or get all the information they need on the site?

- Will customers return?
- Will customers understand the business concept?
- Will the business be able to handle inbound and outbound call volumes?
- Will customers prefer self-service or human contact?
- Will the Internet customer service be in-house or provided by a third party?
- What are the metrics and goals for customer service?

To address these questions one must look at the fundamentals of Internet service design. When customers interact with Internet services their communication is task-specific (Clegg, 2010). The task could relate to an enquiry, purchase intent or a complaint. Customers prefer speed and accuracy in any service encounter. Depending on the nature of their task some may have no problems using an automated system but others may require some degree of human contact. When dealing with customer complaints, Metters et al. (2006) find that the customer may e-mail their complaint to the company; however, the e-mail offers the least effective vehicle for customer complaint resolution due to miscommunication and long-time lags (Timm, 2008). The best way to handle complaints is through real-time interaction with a skilled agent. The customer must always be given the option of contacting the company instead of forcing them to self-serve. According to Timm (2008), more than two-thirds of customers stop doing business with a company because of poor access to services and information.

He suggests that in order to facilitate communication, firms can develop a database containing frequently asked questions (FAQ's) to assist customers online. FAQ's are efficient and effective but the problem encountered by customers is that they have to read through a few hundred questions before encountering a question that will assist them in their query so yet again this is not entirely efficient for a self-serve customer. Sophisticated web sites can do multiple word searches to try and enhance the experience for the customer. A new variation to chat rooms and the internet are blogs. A blog is simply a journal maintained by a firm or an individual. Bloggers are very influential in shaping a firms image. Blogs also assist in sharing information between the firm and the customer or between fellow customers (Clegg, 2010; Schiffman & Kanuk, 2004). Clegg (2010) supports the idea of a firm setting up a blog as it connects the firm to customers instantly. She suggests that a firm can maximise their reach by setting up blogs via social media sites such as Twitter, Facebook and LinkedIn. Clegg (2010) looked at the role of the Internet within an insurance organisation.

She found that insurers are looking for ways to drive improvements within the firm such as through claims intake via the web, claims data download, faster turnaround for claims and real-time updates. Forward-thinking carriers are benefitting from claims efficiencies by focusing on collaboration, cost saving, cutting-edge technology and clarity in the claims lifecycle. Agencies, on the other hand, are focusing on customer service (satisfaction), cost of doing business, company reputation for innovation and claims agility. Clegg (2010) further supported the use of the Internet in speeding up the claims process. Fichter & Wisniewski (2010) offer advice in terms of website design. They suggest that good accessible content is critical for every website. Firms should avoid long sentences and paragraphs and break up information for consumers to comprehend. The personality of the website is also important, in that the interaction between the firm and customers should be friendly and personal. They further suggest that user-testing is very important. Firms

must monitor the top five or ten areas that are frequently visited and refine and improve on them so as to make the system more user-friendly. Site navigation should also be quick and easy.

Disadvantages of Web-Based E-Service: E-service alone is not a hundred percent sure-fire strategy for handling queries. It can be seen as a cost-effective measure as it enables self-service, Web, blogs, e-mail and live chat but e-service is not a substitute for old fashioned phone calls and direct human contact (Keaggy & Hurst, 2002; Schiffman & Kanuk, 2004; Timm, 2008). It is important to understand that the Internet is a moving target, with a hardware life cycle of about five years and software life cycles of even shorter times, with updates occurring frequently; hence, staying updated is expensive. Many firms have rushed to migrates customer service to the Web and have in the process encountered service failures. Ignoring the human side of customer service can turn what looks like a low-cost service alternative into a costly mistake. Technology also poses the challenge for the firm to have well-maintained, state-of-the-art equipment and qualified and competent people to operate it, leading to constant training of staff (Lucas, 2005). Many firms also see technology as a way of reducing staff costs and, therefore, cut back on jobs. As pointed out earlier the rate of technological advancement is always changing thereby placing extra stress on firms and staff to keep up with these changes. Constant training and the increased demand to perform leads to extreme levels of stress and is a contributing factor to the high turnover rate of call centre staff and for customer defection (Lucas, 2005; Reichheld & Sasser, 1990).

In addition, due to customer fears of fraud and violation of privacy, consumers are reluctant to disclose information like identity numbers, and credit card account information, addresses and personal data online, which contributes to their paranoia and hinders online communication (Schiffman & Kanuk, 2004). They usually prefer to speak to an agent (Lucas, 2005). Two researchers Keaggy & Hurst (2002) engaged in a face-off about whether the use of weblogs was considered as a legitimate business tool. Keaggy proposes that it is effective as it increases employee communication, knowledge, saves time and resources and builds the firm's reputation and confidence. Keaggy also found that consumers often complain about receiving too many e-mails but with the use of blogs no messages get deleted. Hurst found that although blogs are popular, they are not of much value to the firm as there millions of blogs that contain postings by random authors. He argues that the information contained in these blogs only holds value if the customer takes the time to read it. He supports the use of e-mailed newsletters to customers as a more effective tool. Perez (2004) investigated Dell Incorporated's drive to open IT support hubs worldwide in order to improve service delivery to buyers. Dell has implemented an Enterprise Command Centre (ECC) worldwide that will be staffed around the clock and will act as central repositories of service events in each geographic area.

Clarity and Understanding: Timm (2008) believes that by following a few simple action tips a firm can improve their service on the Web: Action 1: Be there and be quick Ensure that your site is up and running and that the website opens quickly and easily for the customer. Maintain the website and avoid a situation where when a customer tries to access the site, it is down. Ensure that when customers hit your company Web page that it is up and running (Clegg, 2010; Fichter & Wisniewski, 2010). Action 2: Make site navigation simple Web customer service should be one click away. Once customers log onto a home page they should be able to get assistance immediately. Ensure that site navigation is quick, simple and obvious. Customers should always have ways to get back to a specific page to enhance their experience and not wander around in a counterproductive maze (Fichter & Wisniewski, 2010). Action 3: Respond quickly Response times are expected to be immediate. Waiting more than three seconds for a computer screen to refresh is unacceptable (Perez, 2004). Even more important is the quick turnaround time for customer enquiries. E-mails should have a response time of twenty-four hours or less and web chat should have the pace of live conversation (Lu & Zhang, 2003). Action 4: Provide communication alternatives the more high-tech the world becomes, the more some people crave high touch service or non-electronic contact of some sort. At some point, customers can become frustrated with self-serve options and may seek human contact.

The solution may be to provide communication alternatives like e-mail, web chat, two-way interactive video or even telephone services (Keaggy & Hurst, 2002). Action 5: Pay attention to form and function, Customer care sites must be functional and visually pleasing, but not too over the top. Graphic designers, usability engineers, database administrators, content experts and programmers are all critical role players. The most

customer-friendly sites avoid unnecessary clutter and instead maintain a simple, functional site (Fichter & Wisniewski, 2010; Lu & Zhang, 2003; Timm, 2008). Tips to Evaluate and Grow E-Service Effectiveness According to Timm (2008), there are five more useful tips to grow your e-service and make it a good experience for customers to enjoy track customer traffic: By monitoring the click path of the customer the firm can track the service resolution and abandonment rates, average time to connect to the site and frequent requests. This information will enable firms to improve their service offering to the customer. In a study of the different software programs available Borck (2004) found that these programs must have customer-chat amenities such as colour coded text and canned dialogues to speed up responses to FAQ's. In addition, online queue information that can be sent to customers desktops to inform them of where they are in the queue should also be implemented. Benchmark service levels: Firms with good customer care sites benchmark and compare themselves against competitors.

Benchmarking requires keeping careful statistics on existing service levels which can be used to set future target. Typical services monitored include, average time to respond to e-mails, average time to respond to page requests, site uptime, average time to respond to web chat enquiries and the number of resolved and unresolved enquiries per day. Teach your site to learn: Make sure to update information on a regular basis. Check to see what does not work or what is missing, what click paths end in dissatisfied customers and what new questions your customers are asking. An adaptive, dynamic site lets customers know that the firm is listening and responding to their needs. Build on-going e-relationships: Successful human relationships are two-sided. Sometimes people initiate communication that builds the relationship; sometimes they reciprocate to others. Firms can offer e-mail notification to customers about changes in products, catalogues or content provided that they have information to do so first from the customer. Firms must avoid spamming at all costs as this can damage a relationship (Fichter & Wisniewski, 2010). End high for better loyalty: This last tip is designed to leave the customer on a high note, thinking positively about the company. Before a customer logs off from a website, the firm should always thank the customer for a visit. To rebuild goodwill offer a peace token such as a discount on the next visit, or additional service coverage of some sort (Rowley, 2006).

Types of Technology: Previously when customers had a query they would call the call centre. Once the agents obtained a host of information then only were they in a position to handle queries. Today though, technology has expedited the process and some of the typical systems found in call centres include (Lucas, 2005):

- Automatic call distribution (ACD) systems: This routes incoming calls to the next available agent when lines are busy. A recording may also cue one to select a series of numbers on the phone to get to certain people or information.
- Automatic number identification (ANI): It is a form of caller ID which allows customers to be identified before speaking to an agent. This saves time for the agent as the customer's telephone number does not have to be recorded and their geographic location is revealed via information available on a computer screen. Calls can also be routed to the same agent who most recently handled a specific caller.
- Electronic mail (e-mail): It is an inexpensive rapid way of communicating with customers in writing. It allows customers to access information via telephone and then through prompting via a telephone keypad has information delivered via e-mail.
- Facsimile machine (fax): Allows graphics and text messages to be transported as electronic signals via telephone or a PC equipped with a modem. Customers can receive information without ever speaking to a person by simply keying in a code.
- Internet call back: Allows a customer browsing the internet to click on words like "*call me*" enter their phone number and continue browsing. This triggers 0the predictive dialling system and assigns an agent to handle the call when it rings at the customer's end.
- Internet telephony: Allows users to have voice communications over the internet. However, internet telephony is in its infancy and lacks standards, and is not embraced by consumers.
- Interactive voice recognition (IVR): Allows customers to call in 24 hours a day, 7 days a week even if agents are not available. By keying in a series of numbers they are still able to access information or get answers to questions. Such systems also ensure consistency of information.

- Media blending: Allows agents to communicate with a customer over a telephone line at the same time information is displayed over the internet to the customer. This type of technology though has not taken off to its full potential.
- Online information fulfilment system: Allows customers to go to the World Wide Web, access the firm's website and click on the desired information. This is one of the fastest growing customer service technologies.
- Predictive dialling system: Automatically places outgoing calls and delivers incoming calls to the next available agent.
- Screen pop-ups: Are used in conjunction with ANI and IVR to identify callers. As a call is dispatched to the agent, the system provides information about the caller that *pops* onto the agents screen before they answer the call.
- Video: For call centres and customers with video camera computer hook-ups, agents and clients can see one another during interactions.
- Voice recognition: It is a newcomer to the market but is advancing. This system is incorporated into the centre's voice response system. It's used by individuals who dictate data directly into the computer, which converts the spoken words into text.

Customers though would first need to create passwords to verify identification and access their accounts. People with disabilities can also obtain data by speaking into the computer. These are some of the most widely available types of technology being employed within a call centre today. Many of these systems are simple to use and easy to understand 0making the service encounter success and the technology adopted as user-friendly as possible to both front line staff and customers alike. Ruyter et al. (2000) discovered, through their studies, that organisational reputation leads to quicker adoption of e-services by customers.
The firm's reputation also impacted on customer's perceived risk associated with engaging in e-services. If firms were trustworthy and had good reputations, then customers believe that the firm will do its best to reduce risks encountered through e-services.

Aim of the Study: This study aims to assess the influence of the sub-dimensions of Technology (systems efficiency, ease of use, clarity and understanding) in enhancing customer interactions within a call centre.

2. Research Design

Respondents: The e-billing population of customers for the customer questionnaire comprised of 1847 customers in the Durban area. Using Sekaran's (2003) population-to-sample size table, a corresponding minimum sample of 317 was needed; however, only 220 responses were received. Probability sampling technique was used and simple random sampling was adopted for customers. The adequacy of the sample was determined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.851) and Bartlet's Test of Sphericity (1639.776, $p = 0.000$) which respectively indicated suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied. In terms of the composition of the customer sample, the majority of the respondents were males (55%) compared to females (45%). The majority of the sample was between the ages of 40-49 years (30%) followed by 30-39 years (28.6%) and then 50-59 years (19.5%). Whites were the majority respondents of the customer questionnaire comprising 50.5% of the sample followed by Indians (32.7%) and then Blacks (13.2%). The majority of the respondents reported having a Diploma (34.1%) followed by those with a degree (26.4%) and a high school education (21.4%).

Measuring Instrument: Data for the customers' questionnaire was collected using a self-developed, pre-coded, self-administered questionnaires consisting of two sections. Section A dealt with the biographical details (gender, age, race, education) of consumers participating in the study and was nominally scaled with preceded option categories. Section B tapped into customers' perceptions of the impact of the sub-dimensions of Technology (systems efficiency, ease of use, and clarity and understanding) in enriching customer interactions through customer-centric technology within a call centre. Section B required respondents to rate each item using the Likert Scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was formulated on the basis of identifying recurring themes that surfaced while conducting the literature

review. These ensured face and content validity. Furthermore, in-house pretesting was adopted to assess the suitability of both the instruments. Pilot testing was executed on the customer questionnaire to test the understanding of questions. No inadequacies were reported and the final questionnaire was considered appropriate in terms of relevance and construction.

Research Procedure: The research was only conducted after ethical clearance was obtained for the study and upon completion of the pilot study.

Measures/Statistical Analysis of the Questionnaire: The validity of the customers' questionnaire was assessed using Factor Analysis. A principal component analysis was used to extract initial factors and an iterated principal factor analysis was performed using SPSS with an Orthogonal Varimax Rotation. In terms of validity 3 critical factors were identified in stimulating call centre agents' efficiency with latent roots greater than unity were identified (5.391, 1.824 and 1.248). The items were also reflected as having a very high level of internal consistency and reliability, with the Cronbach's Coefficient Alpha being 0.840 with item reliabilities ranging from 0.815 to 0.860.

Administration of the Measuring Instrument: The customer questionnaire was constrained to only those customers that subscribed to e-billing and had an email account. The online survey was administered to a sample of customers within the Durban region, South Africa using Question Pro. Customers were required to completely answer Sections A and B of the questionnaire and then submit their responses via Question Pro return mail. Informed consent was obtained by an authorization letter that accompanied the questionnaire. All participation was voluntary.

Statistical Analysis of the Data: Descriptive statistics (mean, measures of central tendency and dispersion) and inferential statistics (correlation, t-test, ANOVA) were used to evaluate the objectives and hypotheses for the questionnaire.

3. Results

Descriptive Statistics: Customers' perceptions of the influence of the sub-dimensions of Technology (systems efficiency, ease of use, and clarity and understanding) in enhancing customer interactions through customer-centric technology within a call centre (Table 1).

Table 1: Indicates that Customers' Perceptions of the Influence of the Sub-Dimensions

Sub-dimension	Mean	Std Deviation	Minimum	Maximum
System's efficiency	2.9773	0.6353	1.00	5.00
Ease of use	3.0782	0.7886	1.00	5.00
Clarity and understanding	2.9027	0.5319	1.00	4.40
Overall score	**1.7916**	**0.3286**	**0.60**	**2.84**

Technology on call centre effectiveness varies, which in decreasing level of satisfaction and perceived influence are Ease of use (Mean = 3.0782) which is deemed mediocre. System's efficiency (Mean = 2.9773) which ranked dreadfully against an attainable score of 5 as did Clarity and understanding (Mean = 2.9027) which performed equally perilously. The overall score indicates an extremely low level of satisfaction and perceived influence (Mean = 1.7916) of Technology on call centre effectiveness. Against the maximum attainable score of 5, it is evident that there is much room for improvement in terms of all of the sub-dimensions of Technology. In order to assess the areas of improvement, frequency analyses were conducted on each of the sub-dimensions. In terms of system's efficiency, 25.5% of the customers disagreed and another 12.7% strongly disagreed that they find it easy to use interactive voice response (IVR) software when they contact the call centre. In addition, 32.7% of the customer's disagreed and a further 18.6% strongly disagreed that calling the call centre is as effective as using the self-service options such as email and the internet. In terms of the sub-dimension of ease of use, 26.8% of the customers disagreed and 7.7% strongly disagreed that self-service options are quick and easy to use. Furthermore, 17.7% of the customers disagreed and 11.4% strongly disagreed that the firm's website is user-friendly. In terms of clarity, 26.8% of the customers

disagreed and 10% strongly disagreed that the 0000self-service options are useful in assisting with handling their queries. Furthermore, 38.6% of the customers disagreed and 19.5% strongly disagreed that they frequently visit blogs to share information about their service encounter with the firm.

Inferential Statistics

Hypothesis 1: There exists significant intercorrelations amongst the sub-dimensions of Technology (systems efficiency, ease of use, and clarity and understanding) respectively.

Table 2: Pearson Correlation (r): Inter Correlations of the Influence of Technology (N = 220)

Sub-dimension	*r/p*	Systems efficiency	Ease of use	Clarity and understanding
Systems efficiency	r	1		
	p			
Ease of use	r	0.463	1	
	p	0.000**		
Clarity and understanding	r	0.519	0.687	1
	p	0.000**	0.000**	

Note: **p <0.01

Table 2 indicates that the precarious constituents anticipated by customers in their interactions with the call centre significantly intercorrelate with each other at the 1% level of significance. Therefore, hypothesis 1 may be accepted. Table 2 indicates strong relationships between ease of use of technology (r = 0.463) and clarity and understanding of systems adopted within the call centre (r = 0.687), respectively. The significant intercorrelations between the dicey constituents of technology indicates that if these dynamics are enriched and developed, it has the potential to have a positive spin-off effect on the communication between the customer and the call centre thereby boosting superior service delivery, greater customer satisfaction and enriched overall efficiency.

Influence of Biographical Data: The influence of the biographical variables (age, race, gender and education) on customers' perceptions of the sub-dimensions of Technology was assessed using ANOVA and t-tests (Table 3).

Hypothesis 2: Customers varying in biographical variables (age, race, gender and education) significantly differ in their perceptions of the sub-dimensions of Technology (systems efficiency, ease of use, and clarity and understanding) respectively.

Table 3: Biographical Variables and the Customers' Perceptions of the Sub-Dimensions of Technology

ANOVA						
Sub-dimensions of Technology	**Biographical Variable**					
	Age		**Race**		**Educational Qualification**	
	F	**p**	**F**	**p**	**F**	**p**
Systems Efficiency	0.384	0.820	0.078	0.972	0.105	0.957
Ease of Use	1.162	0.329	2.359	0.073	0.193	0.901
Clarity and understanding	0.395	0.812	0.337	0.798	0.399	0.754

t-TEST		
Sub-dimensions of Technology	**Biographical Variable**	
	Gender	
	T	**p**
Systems Efficiency	-1.765	0.079
Ease of Use	-1.508	0.133
Clarity and understanding	-0.441	0.660

Table 3 indicates that customers varying in biographical profiles (age, race, gender and education) do not significantly differ in their perceptions of the sub-dimensions of sub-dimensions of Technology (systems efficiency, ease of use, and clarity and understanding). Hence hypothesis 2 may be rejected.

Hypothesis 3: The combined sub-dimensions (systems efficiency, ease of use, and clarity and understanding) significantly account for the variance in Technology when managing customers and their needs (Table 4).

Table 4: Multiple Regression Customers' Perceptions of the Sub-Dimensions of Technology

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-2.174E-16	.000		.000	1.000
	Systems efficiency	.200	.000	0.387	1.564E8	.000
	Ease of use	.200	.000	0.480	1.651E8	.000
	Clarity & understanding	.200	.000	0.324	1.074E8	.000

Table 4 specifies that the combined sub-dimensions account for 100% (Adjusted R^2 = 1.000) of the variance in Technology when dealing with customers and their needs. Table 4 also postulates that these dimensions impact on customer perceptions of call centre efficacy and performance when managing customers and their needs in varying degrees as indicated in the Beta values which are as follows:-

- Ease of use (Beta = 0.480)
- Systems efficiency (Beta = 0.387)
- Clarity and understanding (Beta = 0.324)

Strikingly ease of use has the greatest impact whilst clarity and understanding has the slightest impact on technology within the call centre. The implication of this finding is that customers perceive the ease of use of the technology to be of paramount importance in delivering a higher level of service delivery in satisfying their needs more efficiently but if the technology is difficult to understand or if the self-support systems lack clarity and understanding then this will lead to deficiencies in their communications and interactions with the call centre.

4. Discussion of Results

The results of the study reflected that customers' perceptions of the influence of the key dimension of Technology on call centre effectiveness indicates a low level of satisfaction and perceived positive influence (Mean = 1.7916). These findings were based on customers' perceptions of system's efficiency, ease of use and clarity and understanding that make up their perceptions of the influence of Technology on call centre effectiveness. In terms of the sub-dimension of systems efficiency, the study found that customers did not find it easy to use the interactive voice response (IVR) software when they contact the call centre and that calling the call centre was not as effective as using the self-service options such as email and internet. Similar findings by Pearce (2012) looked at why IVR applications fail to work and the biggest trap is that firms provide service to the customers purely using IVR with *no* human intervention. While IVR is a great self-service facility, it is only useful to route calls and caters for self-service to a closed group; anything beyond this is counterproductive. A frequent trap is not allowing people to connect to an agent (Hollowell, 2002). Contact centres no longer work with numbers only; data is generated from multiple sources, ranging from audio to video. By gathering important data on customer behavior or profiles, businesses can create a more effective and targeted customer service.

A fully hosted IVR and call centre application gives corporate a platform to optimize customer experiences as well as manage costs, increase productivity and generate new revenue. Hollowell (2002) also suggests that when customers require an agent, a good IVR system effectively and seamlessly routes callers from an IVR to an available customer service representative effortlessly. In terms of the sub-dimension of ease of use, the

study found that customers did not find the self-service options quick and easy nor did they find the firm's website to be user-friendly. Similar findings by Dabholkar, Bobbitt & Lee (2003) and Weijters, Rangarajan, Falk & Schillewaert (2007) suggest that self-service technology has had limited success in retail settings. The primary reason for this was due to the lack of understanding of consumers assessment associated with the usage of self-service technology. Conversely, the Economist (2009) & Wang (2012) suggest that self-service technology is gaining prominence. This service encourages consumers to produce the service independent of the service employees' involvement and results in improvements in the retailer's productivity and service quality (Lee, Fairhurst & Lee, 2009). Finally, in terms of the sub-dimension of clarity and understanding, the study found that customers did not find the self-service options to be useful in assisting with the handling of queries and many did not visit blogs to share information about their service encounter with the firm.

Similar studies by Makarem, Mudambi & Padoshen (2009) found that it's not possible to have a single services option to satisfy everyone. In their study some customers preferred technology whilst others preferred human contact. Managers should profile the attitudes of consumers towards technology and interpersonal service encounters as it's not possible to offer only one method of service contact and delivery to consumers. Conversely, Hsieh (2005) proposes that self-service technology (SST) can lead to greater customer service, empowered customers and employees and improved efficiency. Communication is the key to adoption of new technology; listen to what the customer wants and have a protective and reassuring plan for privacy and security to ensure adoption of self-service more readily. In summary, the key finding of the study was predominantly that Customers did not find it easy to use Interactive Voice Response (IVR) and found that calling the call centre was not as effective as using the self-service options. Additionally, the self-service options were not quick and easy to use neither was the website user-friendly. Finally, self-service options were not useful in handling customer queries and customers did not visit blogs to share information about service experiences.

5. Recommendations and Conclusion

Although technology has led to a loss of empathy on the front line and has resulted in a weakening of customer care, newer technologies, if well deployed, can help overcome the problem. Gorry & Westbrook (2011) suggest that the three ways that firms can improve their customer care are by improving its self-service customer care channels, helping front-line employees respond empathetically and exploiting social networks to better care for customers. Technology has become a key enabler in delivering high levels of service; however, over-reliance on technology can impact negatively on service quality (Jack & McCary, 2006). The question that one needs to ask is whether technology-based services can provide the same high level of service that customers expect as they do from interpersonal service providers. As we have seen from the literature, if implemented correctly technology has the potential to save the organization a lot of money in the long run; however, the literature also suggests that over-reliance on self-service technology to the point of phasing out human contact could have disastrous consequences for the organization so it becomes imperative to be able to strike a balance and open up the lines of communication (Jack & McCary, 2006). In addition, waiting lines are a major deterrent in a call centre irrespective of whether the call centre offers self-service options or whether the customer has to hold for an agent.

Research by Peevers et al. (2009) suggest that listening to music can lead to the perception of shorter waiting times while the customer is waiting in the queue but in the long run, long waits should be avoided. In terms of customers' perceptions of the influence of the sub-dimensions of Technology on call centre effectiveness, the following recommendations are suggested in terms of System's efficiency: Customers did not find it easy to use the Interactive Voice Response (IVR) and found that calling the call centre was not as effective as using the self-service options such as e-mail and internet. Upgrade the IVR system to improve response rates and upgrade the software technology in the call centre to improve turnaround times. Cloud technology solutions are at the forefront of shaping the field of contact centre services. Contact centres that migrate to the cloud are investing in a better experience for their customers (Business Tech, 2017). In terms of ease of use Self-service option were not quick and easy to use nor was the website user-friendly. It is suggested that the website be upgraded to include more self-help links. More Frequently Asked Questions should be uploaded; quicker software technology should be adopted to make the website easily accessible and downloadable.

Website information should also contain key information and access to links that make it easy for consumers to access quickly and easily taking into consideration linguistic preferences of consumers, site navigation should also be easy, site design should be attractive and appealing.

Tagged as the most critical business tool for contact centres, the omni-channel approach includes, amongst others, emails, phone calls, texts, chatbots and customer forums. This approach enables customers to interact with multiple channels and the challenge for these channels is to ensure that this is a seamless experience for the customer. Delivering this approach through a customer service centre has many profits, but primarily it ensures that quality and consistency of service across all channels is accomplished and sustained. And finally clarity and understanding: Self-service options were not useful in handling customer queries and customers did not visit blogs to share information about service experiences. It is evident that customers are not too tech savvy and still prefer doing business using conservative methods. It is suggested that although it is important for the organization to be familiar with modern technology in terms of doing business, not to ignore conventional methods of sharing information with customers either. The majority of customers still use these conservative methods to do business. Strike a balance between old and new forms of communication such as through blogs and conventional newsletters such that you still reach both target audiences timeously.

Recommendations for Future Research: This research was undertaken in one public service call centre and hence, the results of the study have internal validity to this organization. In order to enrich generalizability, it would be beneficial to undertake a comparative study within other call centre environments in a variety of service environments in both the public and private sectors. This study also includes a call centre environment where only inbound calls are made and hence, it would be beneficial to evaluate related dimensions in an outbound call setting as interacting with someone who has chosen to interact with you is completely different from interacting with someone who was not expecting your interaction at all.

References

Beirre, M., Riach, K. & Wilson, F. (2004). Controlling Business? Agency and Constraint in call centre Working. *New Technology, Work and Employment*, 19(2), 96–109.

Bendoly, E., Rosenzweig, E. & Stratman, J. (2009). The efficient use of enterprise information for strategic advantage: a data envelopment analysis, *Journal of Operations Management,* 27(4), 310-23.

Borck, J. R. (2004). Successful E-Services. Internet.

Burgess, J. & Connell, J. (2004). Emerging Developments in call centre research. *Labour and Industry,* 14(3), 1-13.

Burke, J. (2001). Relationship aspect Marketing Building customer loyalty in the Internet Age. USA: Silver Lake Publishing.

Business Tech. (2017). How to improve your customer service with communications technology.

Cheng, L., Gibson, M., Carrillo, E. & Fitch, G. (2011). A technology-centric framework for investigating business operations, *Industrial Management & Data Systems,* 111(4), 509-30.

Cheong, K., Kim, J. & So, S. (2008). A study of strategic call centre management: relationship between key performance indicators and customer satisfaction, *European Journal of Social Sciences,* 6(2), 268-276.

Clegg, B. (2010). Agency-to-Carrier collaboration key to Drive Claims-Handling Improvements.

Dabholkar, P. A., Bobbit, L. M., Lee, E. J. (2003). Understanding consumer motivation and behavior related to self-scanning in retailing. *International Journal of Service Industry Management*, 14(1), 59-95.

Dean, A. (2007). The impact of the customer orientation of call centre employees on customers: affective commitment and loyalty, *Journal of Service Research,* 10(2), 161-173.

Dixon, P. (2002). Future wise: Six faces of Global changes. Profile Books. London.

Economist. (2009). The recession spurs self-service: help yourself.

Ellis, V. & Taylor, P. (2006). You don't know what you've got till it's gone: re-contextualising the origins, development and impact of the call centre, *New Technology, Work and Employment,* 21(2), 107–122.

Fichter, D. & Wisniewski, J. (2010). Practical Website Improvement Face-off.

Fitzsimmons, J. A. & Fitzsimmons, M. J. (2006). Service Management: Operations, Strategy and Information Technology. Fifth Edition. New York: McGraw-Hill/Irwin.

Gelderman, C., Ghijsen, P. & van Diemen, R. (2011). Choosing self-service technologies or interpersonal services – the impact of situational factors and technology-related attitudes, *Journal of Retailing and Consumer Services,* 18(5), 414-21.

Geum, Y., Lee, S., Kang, D. & Park, Y. (2011). Technology road mapping for technology-based product-service integration: a case study, *Journal of Engineering and Technology Management,* 28(3), 128-46.

Gorry, G. A. & Westbrook, R. A. (2011). Once more, with feeling: Empathy and technology in customer care. *Business Horizons*, 54, 125-134.

Girman, G., Keusch, P. & Kmec, P. (2009). Faults, failures and availability in Self-Service Technology.

Hollowell, R. (2002). Service on the Internet: the effect of physical service on scalability. Harvard Business Review.

How Technology is changing the Call Centre. (2017).

Hsieh, C. T. (2005). Implementing Self-service technology to gain competitive advantages. *Communications of IIMA*, 5(1), 77-83.

Jack, E. P., Bedics, T. A. & McCary, C. E. (2006). Operational Challenges in a call centre industry: a case study and resource-based framework. *Managing Service Quality*, 16(5), 477-500.

Keaggy, B. & Hurst, M. (2002). Face-off are Weblogs legitimate Business Tools?

Lavin, D. & Maynard, D. (2001). Standardization vs rapport: respondent laughter and interviewer reaction during telephone surveys, *American Sociological Review,* 66, 453-79.

Lee, H. J., Fairhurst, A. E. & Lee, M. Y. (2009). The importance of self-service kiosks in developing consumers retail patronage intentions. *Managing Service Quality*, 19(6), 687-701.

Lin, J. & Hsieh, P. (2011). Assessing the self-service technology encounters: development and validation of SSTQUAL scale, *Journal of Retailing,* 87(2), 194-206.

Lu, J., Chou, H. & Ling, P. (2009). Investigating passengers' intentions to use technology-based self-check-in services, *Transportation Research Part E: Logistics and Transportation Review,* 45(2), 345-56.

Lu, J. & Zhang, G. (2003). Cost-benefit-factor analysis in e-services.

Lucas, R. W. (2005). Customer Service: Building successful skills for the 21st Century. Third Edition. New York: McGraw-Hill/Irwin.

Makarem, S., Mudambi, S. & Podoshen, J. (2009). Satisfaction in technology-enabled service encounters", *Journal of Services Marketing*, 23(3), 134-44.

Malgeri, A. (2007). Customer service and self-service technology.

Mattila, A., Cho, W. & Ro, H. (2011). The role of self-service technologies in restoring justice", *Journal of Business Research,* 64(4), 348-55.

Metters, R., Metters, K. K., Pullman, M. & Walton, S. (2006). Successful Service Operations Management. Second Edition. USA: Thomson South-Western.

Ojiako, U. (2012). Using IS/IT to enhance service delivery", *Industrial Management & Data Systems*, 112(4), 584-599.

Pearce, J. (2012). The seven deadly sins of IVR.

Peevers, G., McInnes, F., Morton, H., Matthews, A. & Jack, M. A. (2009). The mediating effects of brand music and waiting time updates on customers' satisfaction with a telephone service when put on-hold. *International Journal of Bank Marketing,* 27(3), 202-217.

Perez, J. C. (2004). Dell hopes support hubs will improve service delivery.

Piercy, N. & Rich, N. (2009). High Quality and low cost: the Lean service centre, European *Journal of Marketing,* 43(11/12), 1477-1497.

Reinders, M., Dabholkar, P. & Frambach, R. (2008). Consequences of forcing consumers to use technology-based self-service, *Journal of Service Research*, 11(2), 107-23.

Reichheld, F. F., Sasser, W. E. & Jr. (1990). Zero Defections: Quality comes to Service.

Robertson, N. & Shaw, R. (2009). Predicting the likelihood of voiced complaints in the self-service technology context, *Journal of Service Research*, 12(1), 100-16.

Rowley, J. (2006). An analysis of the e-service literature: towards a research agenda.

Ruyter, K., Wetzels, M. & Kleijnen, M. (2000). Customer's adoption of e-service: an experimental study.

Schiffman, L. G. & Kanuk, L. L. (2004). Consumer Behavior. Eighth Edition. New Jersey: Pearson Prentice Hall.

Sims, D. (2011). The benefits of IVR in Retail.

Timm, P. R. (2008). Customer Service: Career Success through Customer Loyalty. Fourth Edition. USA: Pearson Prentice Hall.

Venkatesh, V. & Agarwal, R. (2006). Turning visitors into customers: a usability-centric perspective on purchase behaviour in electronic channels, *Management Science*, 52(3), 367-82.

Wang, M. C. H. (2012). Determinants and consequences of consumers satisfaction with self-service technology in a retail setting. *Managing Service Quality,* 22(2), 128-144.

Weijters, B., Rangarajan, D., Falk, T. & Schillewaert, N. (2007). Determinants and outcomes of customers use of self-service technology in retail setting. *Journal of Service Research*, 10(1), 3-21.

Whiting, A. & Donthu, N. (2006). Managing voice-to-voice encounters: reducing the agony of being put on hold, *Journal of Service Research*, 8(3), 234–244.