The Impact of Operations Performance on Customer Loyalty

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This research develops a longitudinal study that builds upon previous findings that operations performance of service delivery can positively affect customer satisfaction, further extending this verdict to point out operations performance as a direct determinant of customer loyalty. Path Analysis is used as a methodological framework. This paper reports the findings of an empirical research conducted in a large telecommunications company operating in the UK. Regarding operations performance impact on customer loyalty, the research findings support the conclusion that while operations speed may help to acquire customers, it is the operations dependability that more strongly drives customer loyalty in the long term.

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1. Introduction

Customer loyalty is one of the most frequently addressed subjects in the marketing and service literature (Andreassen and Lindestad, 1998a; Kerr, 1999; Patterson and Smith, 2003; Eshghi, Haughton, and Topi, 2007; Heskett and Sasser, 2010). The subject has gained attention of service companies because of its importance to the successful running of any business. Realizing the prime importance of customer loyalty to organisations, a major concern is to determine how it is affected. Issues involving customer loyalty in service organisations have drawn the attention of various researchers concerned with finding the determinants of customer loyalty and their implications in service industries.

Most of the studies on this matter have concluded that customer satisfaction is one of the major determinants of customer loyalty (Parasuraman et al. 1988; Anderson and Sullivan, 1993; Andreassen and Lindestad, 1998a; Lin and Wang, 2006). Besides customer satisfaction, low perceived value compels customers towards switching to competing businesses in order to increase perceived value, which consequently contributes to a decline in loyalty (Anderson and Srinivasan, 2003). Recent research has found that perceived trust directly and positively influences customer satisfaction and customer loyalty (Chiou, 2004). This aspect was strengthened by Lin and Wang (2006), whose study concluded that trusting beliefs could lead to customer satisfaction, which, in turn, influences customer loyalty. Corporate image and Brand image also positively affects customer loyalty and customer satisfaction (Andreassen and Lindestad, 1998a; Javalgi and Moberg, 1997). Other studies have found that service quality is a

strong determinant of customer satisfaction and customer loyalty (Buzzell and Gale, 1987; Zeithaml et al. 1996; Kumar et al. 2008).

Many researchers have studied the influence of waiting time over customer satisfaction/loyalty (Taylor, 1994; Pryun and Smidts, 1998; Antonides et al. 2002; Bielen and Demoulin, 2007). Their studies concluded that although waiting time does not affect loyalty directly, it influences service satisfaction which has direct effect on customer loyalty. According to Bielen and Demoulin (2007), waiting time issues arise due to imbalance between demand and capacity.

Previous research has shown that operations performance of service delivery can positively affect customer satisfaction (Stank et al. 1999). This study builds upon this by pointing out operations performance as a direct determinant of customer loyalty. Specifically, the research studies the impact of operations performance on customer loyalty in one area of industrial services, the telecommunications service industry. In this paper, it has been argued that poor operations performance of service delivery negatively affects customer loyalty. This research uses Path Analysis as a framework to demonstrate the effects of critical operations factors of a telecommunications company on customer loyalty.

The paper is organised as follow. First, a comprehensive description of the main drivers of customer loyalty has been provided drawing from relevant research conducted over the last few years. The main factors of service operations performance, which are the focus of the research, are identified and the hypotheses are stated. Thereafter, the research method is described, which is followed by a description of the research analysis based upon the best Path model generated by the study. Finally, the managerial implications of the findings are discussed and some conclusions are drawn pointing out directions for future research.

2. Theoretical background

The fact that customer satisfaction is of fundamental importance and potentially offers a broad range of benefits for organisations is well established in the literature. Previous studies revealed that a satisfied customer is more likely to repurchase, which leads to increased sales and market share (Cronin and Morris, 1989; Innis and La Londe, 1994). Although there is evidence that customer satisfaction enhances financial performance (Oliva et al. 1992), its direct effect on market share has been questioned. Different authors argued that customer satisfaction per se does not necessarily assure continued purchases when, for example, competitors offer attractive promotions (Anderson et al., 1994; Jones and Sasser, 1995). As repeated patronage motivated by favourable cognitive attitude towards the supplier is essentially a customer loyalty aspect (Dick and Basu, 1994), customer satisfaction is increasingly viewed as a necessary first step, but not a sufficient condition, for creating customer retention and impacting market share (Anderson et al., 1994; Jones and Sasser, 1995; Reichheld, 1996). Furthermore, as customer acquisition is an expensive and difficult task for companies, requiring considerable investment, time and effort, customer retention has become a major concern for organisations, which are increasingly focusing upon strategically building a strong base of loyal customers rather than focusing upon attracting new ones. Indeed, it has been found that retaining customers is more profitable for firms than investing huge sums in attracting new ones (Ennew, 2003; Weinstein, 2002). As a matter of fact, customer retention is an inherent outcome of customer loyalty, which has been positively linked to financial performance indicators such as profitability and market share (Anderson et al., 1994). This aspect is reinforced by Reichheld and Sasser (1990), whose study has shown that enhanced customer loyalty results in increased revenue, increased market share, reduced customer acquisition costs, and overall profitability. Rust and Zahorik (1993) have also reported a sequential linkage between customer satisfaction, loyalty and market share. Under the service profit chain framework, service quality drives customer satisfaction, which creates customer loyalty leading to growth and profit (Heskett et al., 1994).

2.1 Drivers of Customer Loyalty

Since customer loyalty has become paramount for organisations, a major concern is to find out the determinants or drivers of customer loyalty. The marketing and service literature abound with studies which pointed out customer satisfaction as one of the prime determinants of customer loyalty (Parasuraman et al., 1988; Anderson and Sullivan 1993; Andreassen and Lindestad, 1998a; Cronin, 2000; McDougall and Levesque, 2000; Chiou et al. 2002; Lin and Wang, 2006; Chi and Qu, 2008; Heskett and Sasser, 2010). Customer satisfaction is considered a strong predictor of behavioural variables such as customer loyalty, word of mouth, repurchase intentions, etc. (Eggert and Ulaga, 2002). Many researchers as well as service profit chain literature have reported that there is a positive correlation between customer satisfaction, customer retention and customer loyalty which ultimately leads to profitability (Heskett et al., 1994; Parasuraman et al., 1988; Anderson and Sullivan, 1993; Hallowell, 1996; Mittal and Kamakura, 2001).

Service quality has also been associated with customer loyalty. While some researchers have reported that customer satisfaction exerts a stronger influence on purchase intentions than service quality (Cronin and Taylor, 1992), others provided strong empirical evidence supporting the notion that service quality increases customer intentions to remain with a company. For instance, Buzzell and Gale (1987) have found that service quality results in repeated sales and increased market share, which leads to customer loyalty. A research by Zeithaml et al. (1996) concluded that when organisations enhance the quality of their services, customers' favourable behavioural intentions are increased while unfavourable intentions are decreased simultaneously.

Corporate and brand image have also emerged as determinants of customer loyalty (Gronroos, 1988, Andreassen and Lindestad, 1998b). According to Anderson et al. (1994), higher levels of customer satisfaction increases loyalty by building a positive corporate image. Andreassen's study (1999) has also confirmed that there is a positive relation between corporate image and customer satisfaction, which leads to loyalty. Further studies have also concluded that corporate image plays a significant role in developing customer loyalty amongst existing customers (Andreassen and Lindestad, 1998a, 1998b).

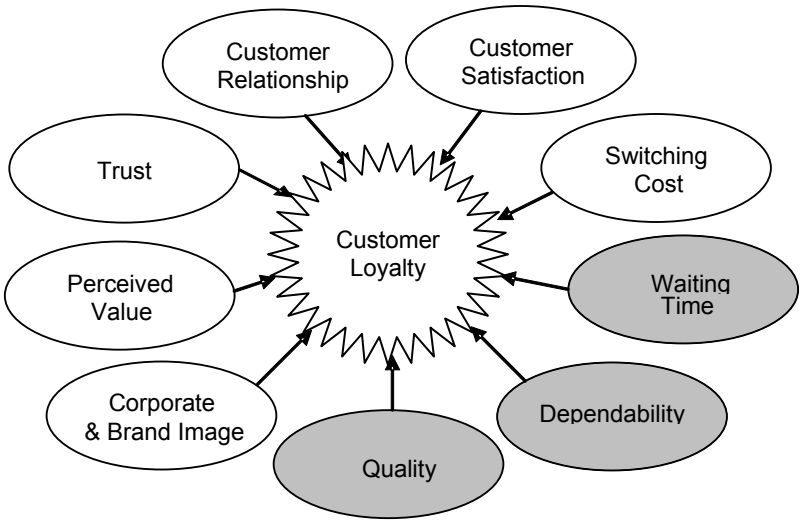
Perceived value expressed as the ratio of perceived benefits to perceived costs is also considered as a determinant of customer loyalty (Zeithaml, 1988; Costabile, 2000; Lam et al. 2004). Customers develop loyalty towards a particular firm when there is a feeling that they are receiving greater value as compared to competitor firms (Bitner and Hubbert, 1994; Sirdeshmukh, et al. 2002). A study by Lam et al. (2004) showed that customer value positively correlates with customer satisfaction and customer loyalty.

Other studies showed that trust directly and positively influences customer satisfaction and customer loyalty (Costabile, 2000; Chiou, 2004). For Gommans et al. (2001) trust is a crucial factor that leads to customer loyalty. This issue was further explored by Lin and Wang (2006) who argued that trusting beliefs lead to positive attitudes (customer satisfaction), which, in turn, influence intention to engage in repeated purchases (customer loyalty). They have also posited customer satisfaction as a mediating variable between trust and customer loyalty.

It has been also found that the development of good relationships with customers also plays a key role in generating customer loyalty. For Buttle (1996), marketing concerns have progressively shifted from developing, selling, and delivering products/services to developing and maintaining a mutually satisfying long-term relationship with customers. Enduring relationships with customers provide a unique and sustained competitive advantage that is hardly duplicated by competitors. Such a strategic orientation is reputed to improve customers' satisfaction and loyalty as well as raising financial performance (Andreassen, 1994).

Switching cost has also emerged as one of the factors that affect loyalty (Zeithaml, 1981; Gronhaug and Gilly, 1991; Heide and Weiss, 1995). Switching costs involve investment of time, money, and psychological effort. Due to these factors customers are likely to refrain from shifting to another supplier of the same product/service (Guiltinan, 1989; Dick and Basu, 1994). Lam et al. (2004) have found that switching cost is positively correlated to customer loyalty and it also affects customers' tendency to recommend other customers.

Figure 1 Main Drivers of Customer Loyalty



Other scholars have turned their attention to the investigation of organisational performance aspects and their impact on customer loyalty. Bielen and Demoulin (2007) have reported that waiting time has a significant influence on customer loyalty, especially in service industries. 'Customer satisfaction with waiting time' was used as a construct to represent customer post-experience and judgmental evaluation related to cognitive and affective aspects of waiting. By measuring the extent to which perceived waiting time period matches customers' expectations for a specific transaction, they have also found that long waiting time negatively affects customers' perception of service delivery, which reflects negatively on loyalty.

Moreover, reliability/dependability (Slack 2004) has also emerged as an operations element of prime importance in service quality studies (Zeithaml et al., 1990; Parasuraman, 1991; Heskett et al., 1994; Berry, 1995; Bloemer et al. 1999; Stank et al. 1999). Patterson and Marks (1992) and, more recently, Lai and Yang (2009) also identify a positive relationship between perceived dependability and user satisfaction. A summarised view of the main drivers of customer loyalty that were the focus of several studies conducted by different researchers over the last years is shown in Figure 1.

As evident in Figure 1, just a few studies have hitherto investigated the impact of operations performance elements on customer loyalty. More specifically, the studies of Bielen and Demoulin (2007), which looked at waiting time (speed) effects on customer loyalty, and studies which looked at the impact of dependability on loyalty, were the ones that more distinctively focused upon operations performance aspects in their investigation. Besides speed and dependability, quality was an important operations performance element that has been widely investigated in previous research concerned with drivers of customer loyalty. Our study builds upon previous knowledge on the impact of speed, dependability, quality on customer loyalty by investigating the joint effect of these three elements on customer loyalty. Furthermore, we have also investigated the inter-relationships among these three elements, i.e. how they affect each other.

3. Theoretical Framework

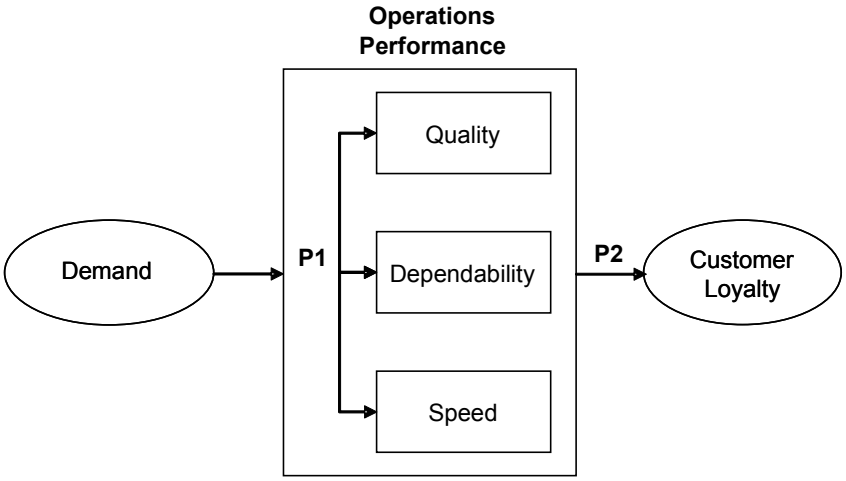
From a service perspective, it is possible to identify two critical dimensions of service performance: performance relative to operational elements and performance relative to relational elements (Stank et al., 1999). The operational elements consist of activities performed by service providers that contribute to productivity, efficiency, and consistent quality. The relational elements comprise activities that enhance customer relationship performance. A similar characterisation was considered by Collier (1991), who described service performance as comprising two distinct dimensions: an operations-oriented dimension and a marketing-oriented dimension. The study reported in this paper particularly focuses upon the operational dimension of service delivery performance.

Operations performance factors for manufacturing firms are well established in the operations literature, which identifies cost, flexibility, quality, dependability, and speed as critical manufacturing competitive priorities (Vickery et al. 1997; Slack et al. 2004). A study developed by Roth and Van der Velde (1991) in the service sector has pointed out courteous service, customer relationships and consistent service as the most critical competitive priorities for service companies. While courteous service and customer relationships are relational elements essentially, consistent service is an operations aspect associated with reliability or dependability. This operations performance factor was also considered in the SERVQUAL model developed by Parasuraman et al. (1985). Subsequent studies based upon the SERVQUAL model have found that reliability was the most important performance factor for customers (Zeithaml et al. 1990; Parasuraman, 1991; Berry, 1995). Reliability is the organisational ability to perform the promised service dependably and accurately (Slack et al., 2004). According to Stank et al. (1999), reliability is most closely associated with operations performance, as it is fundamentally concerned with dependability and accuracy of the service. Many researchers have treated dependability of services separately from quality (Wheelwright, 1984; Nemetz and Fry 1988; Weikum 1999; Avizˇienis et al. 2001 and others). Therefore, in this study quality was measured on functional aspects and dependability was treated independently.

As mentioned before, our research builds upon previous research by testing a model which comprises three operations performance factors and their effects on customer loyalty. Besides dependability, which is an operations element of prominent importance in service quality studies (Zeithaml et al., 1990; Parasuraman, 1991; Berry, 1995), the model brings together two other operations elements which were considered in previous studies: waiting time (Bielen and Demoulin, 2007), which can be regarded as a proxy for delivery 'speed', and quality, which was considered from a functional service quality perspective (Gronroos, 1984). For Gronroos (1984), the functional quality of a service as perceived by customers refers to the quality of the delivery process, i.e. how the service is delivered. The functional quality of a service is usually assessed by measures of customers' attitudes and

satisfaction. These operations performance elements provide the basis for the resultant framework below (Figure 2), which was used to generate the propositions for empirical testing.

Figure 2 Theoretical Framework



In the framework above, operations performance of service delivery comprises three critical performance factors (quality, dependability, and speed) that are usually present in a service delivery system. Consistent quality, dependability of delivery, and prompt delivery (speed) are critical operations performance factors in service delivery systems. These operations elements are considered under a constraining factor, which in this study is represented by 'demand'. The element 'demand' in the framework refers to customer orders, which typically represents the demand from the external environment for a service operation. The hypotheses derived from the framework reflect key relationships that were articulated from the literature review.

Our first proposition (P1) takes into account a primary systemic notion that a system is a set of parts or elements that work with each other to form a whole. It comprises complex interactions between its constituent parts. One implication of this fundamental notion is that the understanding of the parts of a system is not sufficient for the understanding of the whole (von Bertalanffy, 1968). According to von Bertalanffy (1968), it is the interaction between elements that makes each system unique; thus, to completely understand a system it is necessary to analyse the relationships between its parts. In order to apply these concepts to the context of our study, it was considered that in a service delivery system different activities are grouped together to perform specific operations processes. Although specific processes have particular objectives, they are all components or elements of the same service delivery system. Once a service is requested a series of organisational processes are set into motion so that the customer can promptly get what he or she ordered. Therefore, the overall performance of the delivery system as a whole is a resultant of the specific performance of its constituent processes. From the aspects commented thus far, this research hypothesise that the performance of specific processes in a service delivery system affects the performance of other processes in the system. Propositions P1 is therefore stated as:

P1: The processes of a service delivery system do not perform in an isolated manner; the performance of specific processes in the system affects the performance of other processes.

The second proposition (P2) in the framework refers to the impact of operations performance elements on customer loyalty. The capability an organisation has to supply current and future demand is inherently associated to its capacity to deliver service to customers. In the context of this study, capacity is comprised by the resources an organisation needs in order to deliver the services required by the customers. It typically involves a mix of people, equipment, systems, and facilities needed for the execution of core operations activities over a period of time. Logically, companies usually adjust their capacity according to customers' demand. The adequate balance between capacity and demand allows customer fulfilment in a cost effective manner. From a revenue management perspective, the allocation of the right capacity to the right customers at the right price, and according to predicted

demand, is essential to deliver best value and utility to customers (Kimes and Wirtz, 2003). Previous research has shown that operations problems emerge due to imbalance between demand and delivery capacity (Bielen and Demoulin, 2007). Imbalance between demand and delivery capacity can be manifested in two different ways: when the delivery capacity becomes idle due to low demand or when the delivery capacity becomes insufficient to cope with increased demand. Our second proposition focuses upon the latter situation. Considering that the operations elements in the framework shown in Figure 2 (quality, dependability, and speed) are critical performance objectives, we hypothesise that when the performance of critical operations elements in a service delivery system is constrained and negatively affected by increased demand, there will be a negative impact on customer loyalty. P2 is stated as follow:

P2: When operations performance is negatively affected by increased demand, there is a resulting negative impact on customer loyalty.

4. Research Methods

The study was developed in a large telecommunications firm based in the UK. The company has a turnover of approximately $40bn and a wide ranging product portfolio among Business to Consumer (B2C) and Business to Business (B2B) with mobile, fixed lines and specialist telecommunications products.

As the two propositions stated are exploratory and time based, a longitudinal study was considered the most appropriate approach for the research. Some management researchers for example Bowman (1990), Ragins et al. (2000), Pettigrew et al. (2001), have called for more longitudinal studies in management research. A longitudinal research design is particularly suitable for studies which involve a series of measurements taken over a period of time i.e. exploratory studies (Mohr, 1988; Pettigrew, 1990; Bergh and Holbein, 1997; Singer and Willett, 2003; Rindfleisch et al. 2008). These researchers also pointed out that longitudinal data can identify temporal patterns in the data.

The data in this study comprised monthly measurements of variables considered as proxies for demand, speed, quality, dependability, and customer loyalty in a four-year time frame, from 2003 to 2006, for the service of broadband installation to individual consumers. This study consists of large monthly sample size (of 2000 adults) data collected through the telephonic interviews. This rich sample size provided stability in the tracking of key measures over the given time period of four years. In the study, the 'volume of 'customer order' has been considered as a proxy variable for 'demand'. In this sense, increased demand is represented by an increase in the volume of customer orders. For the 'speed' element, the proxy variable used is the average 'lead time' quoted to customers, which is the average number of days the company need to effectively deliver a customer order. From a customer perspective, this is a 'waiting time' element, i.e. the number of days a customer has to wait for having the broadband installed. Hence, when analysing the speed factor for the company one should bear in mind that high 'lead time' means slower speed and, conversely, slower 'lead time' means high speed. The 'quality' variable was measured by the firm on a Likert 10 point scale where 1 = strongly disagree and 10 = strongly agree by asking following questions;

- Do you feel staff members were helpful?
- To what extent do you feel we take care of your needs?
- How convenient it was to deal with us?
- Do staff members provide sense of trust/security?
- Do you feel we have favourable attitude towards our customers?

These questions closely resemble to some of the items of SERVQUAL measures (empathy, responsiveness, trustworthiness and assurance), however firm did not employed SERVQUAL tool while assessing the quality construct. The data was converted into single item scale as all the measures of the 'quality' construct were strongly correlated with each other and reliability test result showed that Cronbach's Alpha value was > 0.70 (0.80). The proxy variable for 'dependability' is 'arrival on first promise'. Dependability means doing things in time and as promised (Slack et al., 2004). Performing well on keeping delivery promises made to customers represents organisational ability to deliver dependable services. In this sense, low measurements for 'arrival on first promise' suggest low dependability performance and, conversely, high 'arrival on first promise' means high dependability. Finally, 'customer loyalty' was observed in terms of customer likeliness to recommend the service provider. This data was collected as a part of the Net Promoter Index (NPI) project. More specifically, the proxy variable for loyalty is the likeliness of service recommendation to third parties. In the study, loyalty is an average measure of the extent to which customers are 'extremely likely' or 'very likely' to recommend the service provider. According to

Dick and Basu (1994), truly loyal customers are the ones who, besides developing preferential attitudes towards the selling firm, motivate others about the services provided by the firm through recommendation or positive word of mouth.

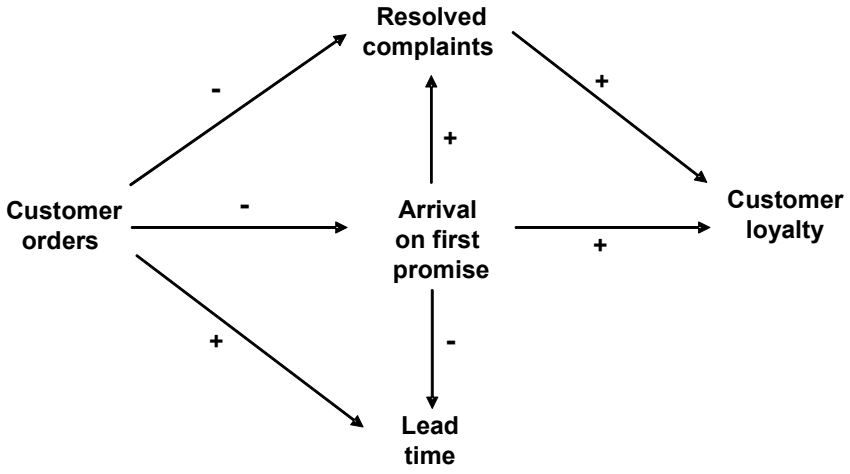
Path Analysis was the main methodological framework used to depict the inter-relationships between the variables considered and, most importantly, to show the effect of the observed operations performance elements on customer loyalty. In practice, it is a straightforward extension of multiple regressions, aiming at providing estimates of the magnitude of hypothesised causal connections between sets of variables (Everitt and Dunn, 1991). Another important aspect of Path Analysis is that it deals only with measured variables. Accordingly, all variables analysed were directly measured by the company studied. The ability to of path analysis to decompose the correlation between any two variables into a sum of simple and compound paths yields information about casual processes, which provides a more explicit approach for the explanation of the relationships under investigation (Ullman, 1996; Kline, 1998; Yang and Trewn, 2004; Kumar et al. 2008). In structural equation modeling as a rule of thumb, any number above 200 (critical sample size) is understood to provide sufficient statistical power for data analysis (Hoelter, 1983; Hoe, 2008) and this study thus meets the minimum requirements of the sample size (2000 adults) for the path analysis.

5. Analysis

The longitudinal time series data was firstly subjected to correlation analysis. The analysis pointed out significant ($p<0.01$ and $p<0.05$) correlations among the variables being investigated. A positive correlation was found between 'arrival on first promise' and 'customer loyalty'. Similarly, a positive correlation between 'quality' and 'customer loyalty' was evident. 'Customer orders' was negatively correlated with 'arrival on first promise' and 'quality'. On the other hand, it was positively correlated with 'lead time'. Further analysis of the correlations showed that 'arrival on first promise' was negatively correlated with 'lead time' and positively correlated with 'quality' variable. This initial analysis provided the basis for the development the path analysis on the longitudinal dataset from the Telecommunication firm.

Our path analysis started with the definition of an input path diagram, which is a path diagram drawn beforehand to help plan the analysis and represents the causal connections predicted by our propositions. To construct a path diagram an arrow is drawn from each variable to any other variable we believe that it affects (Everitt and Dunn, 1991). Based on the initial correlation analysis, the following input path diagram was idealised (Figure 3).

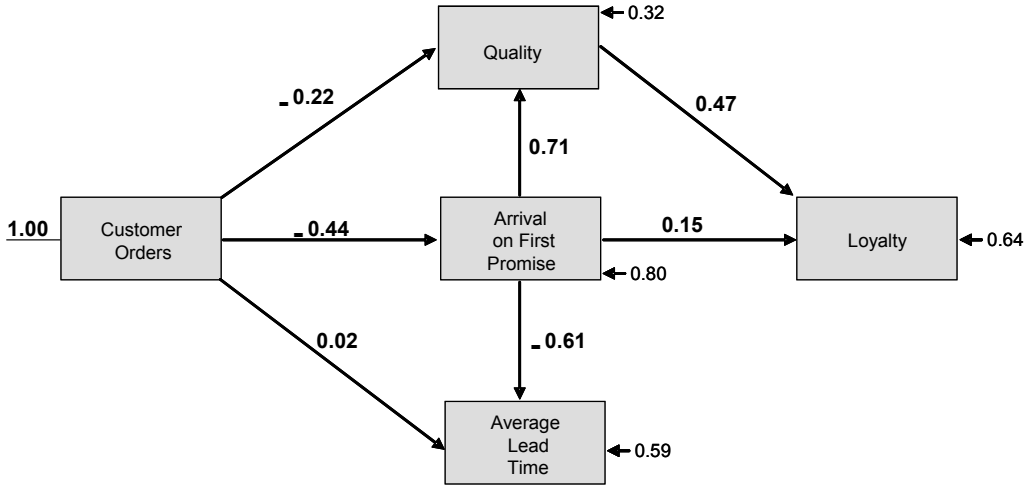
Figure 3 Input Path Diagram



An output path diagram represents the results of a statistical analysis. Our output path model was built based on the input model above (Figure 3). In order to find the model that best fits with the empirical data, a number of alternative variations from the initial input diagram were tested. Careful consideration was given so that the models tested did not violate the theoretical assumptions. The model with the best fitness confirmed the initial input

idealised and the resultant output path diagram is shown in Figure 4 below. The resultant path diagram had a Chi-square value of 3.19, degree of freedom (df) of 3 and RMSEA value of 0.039 as evident from the Figure 4. Apart from Goodness of Fit Index (GFI), Comparative Fit Index (CFI) and Normed Fit Index (NFI) were looked at to check the fitness of the best fit model since they are relatively less sensitive to the sample size. The Incremental Fit Index (IFI) was also measured since it addresses the issue of parsimony and sample size, and takes into account the degree of freedom. Non Normed Fit Index (NNFI) value ranges from 0 to 1 and value close to 0.95 for large sample is indicative of good fit. Relative Fit Index (RFI) value ranges from 0 to 1 and value close to 0.95 indicates superior fit (Byrne, 2001). The fitness values for the best fit model are shown in Table 1

Figure 4 Output Path Diagram (Best Fit Path Model)



Chi-Square=3.19, df=3, P-Value =0.36383, RMSEA=0.039

Table 1 Fitness Values for the Output Model

Fitness Indices	Fitness Values	Acceptable Ranges
Goodness of Fit Index (GFI)	0.97	> = 0.90
Relative Fit Index (RFI)	0.91	> = 0.90
Comparative Fit Index (CFI)	1.00	>= .95
Normed Fit Index (NFI)	0.97	> = 0.90
Non-Normed Fit Index (NNFI)	0.99	>= .95
Incremental Fit Index (IFI)	1.00	>= 0.90

The outcome path model indicates that there is an inverse relationship between customer orders (demand) and 'arrival on first promise', our proxy variable for dependability. This suggests that when orders rise dependability falls. From this, one can imply that the arrival of the service engineers who deliver the service become less dependable as orders rise. By its turn, dependability ('arrival on first promise') has a positive relationship with

'quality. This suggests that as dependability falls 'quality' falls as well. Dependability also has a negative relationship with average 'lead time'. This suggests that as the service engineers become less dependable the 'lead time' quoted to the customer rises. There is also a positive relationship between orders and average 'lead time', which suggests that as orders increase so does the lead time quoted to the customer. The model also shows that the relationship between customer orders and 'quality' is negative, suggesting that as orders increase the quality of service falls.

Considering the Preposition P1 '*The processes of a service delivery system do not perform in an isolated manner; the performance of specific processes in the system affects the performance of other processes*', the outcome path model shows that variations in 'arrival on first promise' directly impacts 'quality' and 'average lead time'. The implication of this aspect is that poor dependability negatively impacts quality and speed performance elements. This provides evidence to support P1. The evidence indicates that dependability has a strong influence over the other two performance elements studied. This finding is in accordance with, and extends the conclusions of, previous studies which showed that dependability is an operations factor of prominent importance (Zeithaml et al., 1990; Berry, 1995; Stank et al., 1999).

The path model also provides support for Preposition P2 *'When operations performance is negatively affected by increased demand, there is a resulting negative impact on customer loyalty'*. The outcome model shows that 'quality' and 'arrival on first promise' have a direct and positive relationship with loyalty. This suggests that as 'arrival on first promise' falls (with rising orders) then loyalty is likely to fall as well. Similarly, as quality falls (due to increases in orders and failure to arrive on first promise) then loyalty is likely to fall as well. An interesting outcome in the model is that there is no direct relationship between speed ('average lead time') and 'loyalty'. A possible explanation for this aspect is that 'lead time' is in practice an order winning criteria (Hill, 2005), setting customers' expectation for the delivery time, whereas the other two variables ('arrival on first promise' and 'quality') are post sale attributes. This implies that it is the post sales operational performance which more strongly affects loyalty, not those attributes which help contribute to the sale. The implications of this aspect for companies are considerable. While promising short lead times might help in acquiring customers, being dependable and delivering consistent quality are performance factors that drive loyalty.

Taking into account all aspects above, it is possible to depict an overall scenario for the company studied: when orders increased and 'arrival on first promise' declined, after capacity was reached, then the average 'lead time' increased and the quality of service fell. Additionally, when 'arrival on first promise' fell then the average 'lead time' rose, as those delivering the service responded to failure to meet promised installation dates. In a similar way, when service engineers visiting homes to install broadband become less dependable as orders rose, the quality of service fell. Ultimately, poor operational performance in both dependability and quality directly and negatively impacted customer loyalty.

6. Implications

The research findings strongly suggest that the continuous growth of demand over time increasingly requires delivery capacity until a certain point that full capacity will be reached. If demand continues to increase and no extra capacity is provided, there will be a situation of imbalance between demand and capacity, where capacity is insufficient to cope with increased demand. Our findings show that this latter situation compromises the operations performance in terms of dependability, quality and speed. Moreover, a negative impact on dependability escalates the negative impact on quality and speed. The operations speed, in terms of average lead time offered to customers, sets customers' expectations for the dependability of the service. Failure to do as promised (dependability) directly and negatively impacts customer loyalty. The pressure on dependability aspects of the operations, due to high demand and insufficient capacity, affects the quality of service. Finally, poor performance on quality aspects also directly and negatively impacts customer loyalty, escalating the overall impact of operations performance on customer loyalty.

Adding to previous studies which analysed the impact of operations elements such as quality and speed on customer loyalty, an important outcome of this research is the evidence that dependability is a driver of customer loyalty. This represents a key finding of the study, as it not only adds to the knowledge and understanding of the driving forces of customer loyalty, but also highlights how critical dependability is to sustain the overall performance of operations impacting customer loyalty. Another important aspect to consider is that speed, in terms of average lead time, not only sets the reference for the internal assessment of dependability performance, but, most importantly, it also sets the level of customers' expectation for the dependability of the service. According to our findings, failure to meet promised deadlines harms customer loyalty. Responding to this by offering a higher lead

time with the purpose of bringing customers' expectations down might complicate instead of solving the problem as lead time is often an order winning factor (Hill, 2005). Rather than increasing lead time companies should actually review their operations processes with the purpose of reducing the lead time in the different stages comprising the service delivery system. The sales department can then offer competitive lead time without compromising the operations dependability.

It can also be inferred that imbalance between demand and capacity, where capacity is insufficient to cope with increased demand, triggers a series of operational problems that ultimately compromise customer loyalty. The implication of this is that customer loyalty is as much an operations concern as it is a marketing concern. Therefore, the development of a customer loyalty strategy requires more comprehensive approaches that integrate demand and capacity management. In practice, the changing nature of the market makes it very difficult for service managers to adequately balance supply and demand. Different authors have acknowledged the need for more integration between demand management and capacity management (Rhyne, 1988; Heskett et al. 1990; Klassen and Rohleder, 2002). Klassen and Rohleder (2002) highlight the lack of integration between the operations and marketing literature and argue that service organisations should move from approaching these issues in an ad hoc manner to integrating demand and capacity management into a single decision area.

Finally, the results show that different elements or processes that form a service delivery system do not work in an isolated manner. More specifically, operations processes involved in a service delivery system impact each other, but not necessarily to the same extent and direction. Our results provide evidence that processes related to the dependability of the delivery system have strong impact on other elements of the system. The managerial implication of this is that optimising processes to improve the dependability of a system is likely to produce better results in customer loyalty than the optimisation of other processes related to other specific operational aspects of the delivery system. This is not to say that processes other than the ones related to dependability are not important and should not be optimised. However, it is important to bear in mind that changes in some processes of a service delivery system do not necessarily guarantee improved performance of the delivery system as a whole. For instance, our findings suggest that the company under study tends to increase lead time when dependability is affected by increased demand. This sort of change produces a palliative effect on customers' expectations only and it does not necessarily impact their loyalty or contribute to the overall performance of the delivery system.

7. Conclusions

This study has developed knowledge on the drivers of customer loyalty. Previous studies have pointed to the relationship between operations performance and customer loyalty. This research adds considerably to the knowledge in the area by introducing dependability as an important driver of customer loyalty. Speed may help in customer acquisition but in the long term customer retention is mainly affected by dependability and consistent quality. Companies with limited capacity to match demand usually offer longer lead times for delivery. Our findings suggest that this practice is a palliative measure that negatively affects dependability performance, which, consequently, impacts on customer loyalty negatively on the long term. This is a fruitful area for further longitudinal research.

It is important to bear in mind that the study here reported was conducted in a telecommunications context. Therefore, the generalisations we make refer, and are limited to, the telecommunications sector. Wider generalisations require the replication of this study in other service sectors.

The evidence provided by this study strongly points to the inter-relationship between three elements of operations performance: speed, dependability and quality. While the literature tends to treat these three variables independently, the outcome of this research shows that like any system the elements are closely linked. Looking at these relationships over time is vital and this requires alternative methods of research. Longitudinal studies are required to tease out cause-effect phenomena. Moreover, it would be interesting to include flexibility and cost in further research on the impact of operations performance on customer loyalty. These two elements would require other theoretical considerations that were not in the particular focus of our study at this stage.

In general, it seems to us that more studies that attempt to identify relationships through time and draw upon systems theory are required. Systems provide an intellectually coherent framework that fundamentally allows for multiple causality of outcomes. We hope that this paper helps to spawn new research in systems and causality that will begin to turn "black boxes" more transparent and begin to explain why relationships between operations and customer loyalty are so important.

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