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RESOURCE PRODUCTIVITY MANAGEMENT IN THE SERVICES SECTOR

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1. INTRODUCTION

In recent years productivity has tended to be eclipsed by discussion of quality and customer service both offering the holy grail of simultaneous improvement in quality and productivity. It is undoubtedly the case that in some instances work to reduce waste and improve quality of services leads to a simultaneous improvement in both factors of quality and productivity. However services managers are all too aware that in many cases they are handling a trade-off between absolute quality of service and efficiency. This is particularly so for those businesses which are competing more on price than level of service. Consequently an examination of approaches to managing the productivity elements of services is important for the further understanding of the best practises for managing in the services sector. This of course in no way diminishes the furtherance of quality improvement in service operations.

The survey aims to contribute to the knowledge in the service area on how managers across a range of services are approaching productivity measurement and improvement. The results demonstrate difficulties which are experienced in finding suitable measures of productivity to control the use of resources and gauge worthwhile improvements.

The survey is part of a wider investigation of the management of resources in services for the improvement of productivity and quality in services which is being carried out by Armistead and Clark at Cranfield. The research includes work on the design of service delivery systems, capacity management, and productivity and quality management. The results of this survey would indicate a strong awareness of the interrelationship between capacity management and productivity and quality performance

2. SERVICE PRODUCT INFORMATION

2.1 Introduction

The first section of the survey was directed to gathering information about the service sector, the nature of the service, the demand pattern over a period of time, the difficulty of meeting demand and the most important factors concerned with customer service. This information sets the context for any productivity improvement. A service whose customers require a 'fast' response may be expected to have most difficulty with an hourly or daily variation in demand.

2.2 Response Rate

The questionnaire had a response rate of 6% with 132 replies. This is lower than hoped for but perhaps not surprising given the length of the questionnaire and the difficulties associated with reaching appropriate persons in many service business to provide answers.

2.3 Service Sector Profile

The responses for the survey were highest from the banking, insurance and professional services sector although there is representation across all sectors. This as much reflects the bias in the original sample as the level of interest in the productivity management from those sectors.

The response profile across the sectors was the following

Sector	Percentage of Respondents
Banking	11.4
Insurance	12.2
Professional Service	23.6
Medical Service	4.1
Public Service	12.1
Hotels & Restaurants	5.7
Transport	14.6
Distribution	5.7
Retailing	7.3
After Sales Service	1.6
Telecommunications	1.6

Response Profile
(n=132)

Table 1

2.4 Type of Service

The respondents were asked to described the nature of their service according to it being standardised or customised, or mixed with a bias towards either standardisation or customisation. The distribution across the sectors was the approximately evenly split between a mid-point on a continuous scale between customised and standardised delivery as shown in Table 1:

Type of Service	Respondents(%)
Customised	20%
Mixed but more Customised	27%
Mixed but more Standardise	42%
Standardised	11%

Type of Service
(Percentage of Respondents)
(n=123)

Table 2

It is of course difficult to draw any strong conclusions from the limited results as the question itself is open to individual interpretation. However when the different sectors are identified separately (Table 3) it can be seen from the responses received that some

sectors see themselves as being on one side or other of the standardised (Banks and Retailing) to customised (Hotel and Restaurants) scale while for other sectors there are a range of responses across the range.

Sector	Customised	Mixed but more Customised	Mixed but more Standardised	Standardised %
Banking	0	2	10	2
Insurance	3	2	7	3
Professional Services	10	10	7	2
Medical Services	0	1	4	0
Public Services	4	1	8	2
Hotels and Restaurants	3	4	0	0
Transport	3	8	5	2
Distribution	1	3	3	0
Retailing	0	2	4	3
After Sales	0	0	2	0
Telecoms	0	0	2	0

Type of Service by Sector
(Number of Respondents)

Table 3

2.5 Changes in Demand and Numbers of Services Offered

The majority of respondents reported handling both an increase in demand for services in the last three years along with an increase in the number of services offered. The exact distributions are shown in Tables 4 & 5. The pressures associated with such changes are likely to present managers with increased problems of managing productivity improvements while maintaining or improving service levels.

Demand	Respondents(%)
>50% up	23
<50% up	61
No change	8
<50% down	8

Changes in Demand for Services over 3 Years
(n=130)

Table 4

No of Services	Respondents(%)
More then doubled	11
Less than doubled	67
No change	18
Less than halved	4

Changes in Number of Services Offered over 3 Years
(n=130)

Table 5

2.6 Difficulty in coping with variation in demand

A feature of service delivery is the problem of matching demand with available capacity and this is exacerbated by variations in demand. Respondents were asked to say which frequency of variation was the most difficult for them to deal with. Across the range of service sectors the distribution was the following:

Frequency of Variation in Demand	Respondents(%)
Hourly	17
Daily	32
Weekly	9
Monthly	20
Annually	13
No Problem	13

Frequency of Demand Changes which Cause Difficulty
(Percentage of Respondents)
(n=115)

Table 6

There are differences between the sectors on the most difficult frequency to manage which are shown in Table 7.

The reasons given for the difficulties are essentially the same for all respondents irrespective of time period i.e. uncertainty of demand and the difficulties in responding quickly with staff and other resources. Those that report difficulties with the longer frequencies such as professional services are often are using staff who are highly skilled and more difficult to recruit on a short lead time.

Sector	Frequency					
	Hourly	**Daily**	**Weekly**	**Monthly**	**Annual**	**No Problem**
Banking	3	2	1	2	2	2
Insurance	2	3	1	5	2	2
Professional Services	1	3	3	10	6	3
Medical Services	0	2	1	0	2	0
Public Services	3	2	0	3	1	4
Hotels & Restaurants	3	2	1	0	0	1
Transport	5	7	1	1	2	2
Distribution	2	3	0	1	0	0
Retailing	0	5	2	1	0	1
After Sales Service	1	1	0	0	0	0
Telecoms	0	2	0	0	0	0

Frequency of Demand Changes Which Cause Difficulty
by Sector
(Numbers of Respondents)
(n=115)

Table 7

2.7 Customer Service Factors

Respondents were asked to rank the five most important factors for customer service. The analysis is presented as both an average and a weighted average and shows in Table 8 reliability to be most important factor suggesting the need to maintain service levels while seeking improvement in productivity. The next most important factors relate to aspects of timing in responsiveness and availability. Both of these require good management of capacity if service levels are not to suffer in the short term and again can be expected to exacerbate difficulties of gaining improvements in productivity.

Factor	Ranking					Average	Weighted Average
	1	2	3	4	5		
Reliability	39.2	23.3	19.8	7.5	8.2	19.6	24.8
Responsiveness	24.2	22.5	16.5	15	5.7	16.8	19.7
Availability	9.2	22.5	19	15.8	13.9	16.1	15.9
Courtesy	5.8	7.5	17.4	20.8	28.7	16.0	12.1
Security	4.2	4.2	5.8	10.8	9.8	7.0	5.8
Information given to Customers	7.5	10.8	13.2	17.5	21.3	14.0	11.8
Physical Product	9.2	7.5	4.1	8.3	8.2	7.5	7.5
Physical Environment	0.8	1.7	4.1	4.2	4.1	3.0	2.4

Most Important Customer Service Factor
(Average and Weight Average)
(n=120)

Table 8

2.8 Summary

The distribution of the responses across the service sectors reflects the bias in the original sample. The respondents represent an almost even split between those who identify their service as being more standardised and those for whom it is more customised.

The majority of respondents find themselves dealing with changes in both the absolute level of demand and the numbers of services to be delivered.

Changes in demand cause most difficulty for all frequencies which probably reflects the differences in the method of delivery. The only conclusive finding is that the hourly and daily frequency is correlated with more standardised services.

The perceived most important customer service factors are of reliability of service and time aspects of responsiveness and availability.

3. PRODUCTIVITY MEASUREMENTS AND REPORTING

3.1 Introduction

The aim in this section was first to explore the measurements which are used to establish the overall performance of the operations and second to identify measurements which are specifically used to track productivity. Subsequently respondents were asked to identify the group responsible for measuring productivity and who in their organisations receive information relating to productivity performance. Finally they were asked to indicate the ways in which information is communicated and the frequency with which it happens.

Many respondents did not identify both overall measures and productivity measures and it is not clear from this survey if this is because there is a tendency to see no clear distinction between overall measures of performance and productivity measures or whether they appear in both sections because of the importance of productivity measures as overall measures for the organisations. There are obviously questions relating to the scale of the operation which respondents had in mind when answering the question on productivity measurements which remain outstanding.

3.2 Overall Performance Measures

When measuring overall performance it seems that a number of measures are employed which range across finance, quality and customer satisfaction, productivity, market share, and meeting objectives. In an attempt to produce a number of groupings the responses were analysed against twelve categories, namely: meeting objectives, market share/growth, volume, financial (profit, revenue), costs and meeting budgets, timeliness (responsiveness, completion on time, service time), quality, customer satisfaction, productivity as an output/input measurement and utilisation, staff turnover, failures or losses. The aggregated results for all respondents by sector are shown in Table 9.

PERFORMANCE MEASURES

	A	B	C	D	E	F	G	H	I	J
* Objectives	1	3	4	1	0	0	0	0	0	0
* Market Share/Growth	2	3	4	0	0	0	0	1	0	1
* Volume	3	2	8	6	1	1	1	1	3	2
* Financial (Profit/Revenue etc)	6	4	13	6	4	0	5	5	0	3
* Costs/Budgets	5	4	9	8	1	3	2	5	0	2
* Timeliness	2	3	7	5	1	5	1	6	4	3
* Quality	5	4	5	8	3	4	5	5	2	2
* Customer Satisfaction	4	6	11	8	2	1	1	7	1	1
* Productivity (Output/Input)	2	5	5	0	0	1	2	2	0	0
(Utilisation)	0	0	2	0	0	1	0	3	0	0
* Staff Turnover	0	0	1	0	0	0	1	0	0	0
* Failures/Losses	1.	1	2	4	0	2	3	3	1	1

Key:-
A - Banks
B - Insurance
C - Professional
D - Medical & Public
E - Hotels
F - Distribution
G - Retailing
H - Transport
I - Telecom & After Sales
J - Other

Performance Measurements by Sector
(Numbers of Respondents)

Table 9

It is rather surprising that financial or budget measurements do not feature as measures of overall performance in all cases even if there is as likely with the present questionnaire a degree of ambiguity as to whether the respondent is considering a small unit or the organisation as a whole when answering the questions. It is though reassuring that customer focussed measures of quality, customer satisfaction and delivery timeliness are well represented. The relative low incidence of productivity measures in the overall measures is perhaps surprising. It is possible that respondents thought to exclude these on the grounds they were the subject of a separate question.

It is not possible from the present results to correlate the nature of the overall measurements of performance with any declared features for competitiveness ie it might be expected if the organisation is competing essentially on price to see measures which

control costs to be significant, while if the competition is on the basis of additional features which add value like customer service quality these would form a substantial proportion of the performance measures, and if there is a combination of price and quality as the basis of competition both factors would be equally represented in the measurements.

3.3 Productivity Measurements

There were a smaller number of replies to the question relating to measures of productivity with only about 50% of the total responses producing information which could be included in the analysis. It was not clear whether this was due to no measurements being made or to there being no difference in the perception of the overall performance and productivity measurements.

There were a wide range of different measurements presented which was not surprising given that the sample was drawn from across the service sectors. The responses included productivity measurements relating output to input or the reciprocal input to output both of which might be regarded as true measures of productivity. There were also surrogate measures which reflected input costs, utilisation and efficiency in meeting standards (either work measurement standards or cost standards), and effectiveness measures which reflect aspects of quality. The appearance of quality measures is not surprising given the importance attached in quality improvement programmes to a link between simultaneous improvements in quality and productivity.

There were also some measures of output alone which cannot in any sense be regarded as measures of productivity but they have been included in the analysis at this stage for the sake of completeness.

In an attempt at making some sense of the range of measures presented by the respondents the replies were analysed against a number of main categories:

* An output/input measure, (output measures alone were included in this section). The input was a partial measure of resources being staff, equipment, or material.

* Input and input/output measures resulting in a financial measure.

* Utilisation of staff, equipment, materials, or facilities.

* Efficiency measured as actual against standard or budget in terms of a financial measure or a work measurement standard, throughput or service time, and backlogs.

* Effectiveness measured by error freeness, numbers of complaints, meeting quality standards, or audit to quality procedures

The numbers of replies which could be included in the analysis against this range were limited. Many replies were very general e.g. sales, banking, instruction and staff development , budget reviews, and quarterly statistics, staff department teams, quality circles, mathematical models. However the full analysis is shown in Table 10 for all the sectors.

The low numbers of good replies make any statistical analysis impossible across the different sectors. However the following are general conclusions.

- First, all sectors use an output/input measure in terms of volume/employee. This is the only true productivity measure. The use of an inverse of productivity as unit costs and other input/output measures are also common.

- Second, other indicators of productivity like imput costs, utilisation of resources, and efficiency are more patchy in their use. Input costs are mainly measured as staff costs. Measurement of utilisation might be expected to relate to the most costly resource and this is apparent for staff utilisation in professional services and material and facilties utilisation in retailing, and equipment for transport and distribution (although it might be surmised that this measure is a surrogate for staff utilisation when staff costs can be significant).

- Third, the inclusion of quality indicators is to be expected given the congruence of many service measures as both indicators of productivity and quality. Service times are perhaps the best illustration of this factor.

- Fourth, the wide reported use of an output measure alone expressed as volume or value is perhaps the one measure which cannot be regarded in any way as a measure of productivity.

PRODUCTIVITY MEASURES

	A	B	C	D	E	F	G	H	I	J
*Output/Input										
- Value or Sales/Costs	0	1	0	0	0	0	0	0	0	0
- Volume/Employee	3	3	2	1	1	4	1	4	4	2
- Value/Employee	0	0	2	1	1	0	2	0	0	2
- Value/Unit Equipment	0	0	0	0	0	1	0	0	0	0
- Value/Material Costs	0	0	0	0	0	0	1	0	0	0
*Output										
- Volume	2	1	1	3	1	1	1	2	1	2
- Value	1	1	5	0	0	0	0	0	0	0
*Output/ Unit Time	1	3	2	1	0	0	1	1	0	0
*Input/Output										
- Unit costs	2	0	0	1	0	0	1	4	3	0
- Costs/Value(or Sales)	1	0	0	0	0	1	3	1	0	1
- Cost/Customer	1	0	0	0	0	0	0	0	1	0
- Staff Numbers/Value	0	0	0	1	0	0	0	0	0	0
*Input Costs										
- Staff	2	0	0	0	1	1	2	1	0	0
- Overtime	1	0	1	0	0	0	0	1	0	0
- Administration	0	0	2	0	0	0	0	0	0	0
- Total Resource Costs	0	0	0	1	0	0	0	0	0	1
*Utilisation										
- Staff	0	1	9	0	0	0	0	0	0	0
- Equipment	0	0	2	0	0	0	0	0	1	0
- Material	0	0	1	0	0	0	1	0	0	0
- Facilities	0	0	0	0	0	0	1	0	0	0
*Efficiency										
- Meeting Standards	1	3	8	3	0	1	1	1	1	2
- Throughput (Service Time)	1	2	3	1	0	5	0	1	2	1
- Backlog	0	0	3	0	0	1	0	3	0	0
*Effectiveness										
- Availability	1	1	2	1	0	2	2	3	0	0
- Error Freeness	4	2	0	2	1	1	0	1	0	1
- Complaints/Satisfaction	1	1	0	0	0	0	0	2	0	0
*Auditing										
- Standards	1	0	0	0	0	0	0	0	0	0
- Procedures	1	0	0	0	0	0	0	0	0	0

Key:-

A - Banks
B - Insurance
C - Professional
D - Medical & Public
E - Hotels
F - Distribution
G - Retailing
H - Transport
I - Telecom & After Sales
J - Other

Productivity Measurements by Sector
(Numbers of Respondents)

Table 10

3.4 Responsiblility for Measuring Productivity

Respondents were asked to state who was responsible within their organisation for measuring productivity. The results are shown below in Table 11 . The results are perhaps not unexpected with the main responsibility lying with managers and supervisors rather than at staff level. It is interesting to reflect on how the question was answered given that there is a supplementary question which was not asked, namely who carries out measurement. It may be assumed that while senior managers have a responsibility for measuring productivity they do not make the measurement. If this inference is correct it might be expected that board members would appear in a higher proportion as being responsible for measuring productivity.

Outside of the alternatives which were offered to respondents the most commonly stated parties responsible for productivity measurement were management services, O&M departments, productivity services, management accounts,and consultants.

	Not at All		To a Great Extent		
	0	1	2	3	4
Board Members	35	20	16	11	18
Senior Managers	5	15	17	21	42
Middle Manager	3	3	18	40	36
Supervisors	8	8	25	20	39
Staff	21	35	25	11	8

Responsibility for Measuring Productivity
(Percentage of Respondents)
(Board Members n=113
Senior Managers n=120
Middle Manager n=116
Supervisors n=107
Staff n= 105)

Table 11

3.5 Recipients of Information on Productivity

In response to the question relating to who receives information on productivity there is a greater tendency for all senior and middle managers to receive information, 71% and 62% respectively and in the case of the other categories, board members, supervisors, and staff for only some of them to receive information, 44%, 46%, and 57% respectively. The full results are shown in Table 12.

While it was not unforeseen that some staff would be excluded from receiving information in a proportion of responding organisations it was not expected that the proportion of board members not receiving any information would be as high as the 8% found.

Respondents were invited to identify others outside of the main groupings who received information. Trade union representatives were mentioned as were functional departments such as management services, O & M department, and finance.

One respondent wrote, "One Senior Manager - me - gets it. No one else seems to care." One is left wondering if this a lone voice or more commonly seen elswhere if not among the people who did respond to this survey.

	None 0	1	All of Them 2
Board Members	8	44	48
Senior Managers	1	28	71
Middle Manager	1	37	62
Supervisors	4	46	50
Staff	13	57	30

Recipients of Information on Productivity
(Percentage of Respondents)
(Board Members n=121
Senior Managers n=124
Middle Managers n==118
Supervisors n=114
Staff n=111)

Table 12

3.6 The Methods of Disseminating Information of Productivity

The question regarding the methods of disseminating information about productivity performance revealed a use by many respondents of more than one method. It is of note that staff are more likely to receive information verbally in contrast to the written form used for managers and board members. It is interesting that charts displaying productivity information are not more widely used.

	Verbally	Written Reports	Charts (Displayed)	Charts (in Reports)
Board Members	14	49	13	24
Senior Managers	17	42	15	26
Middle Manager	21	37	14	28
Supervisors	27	30	18	24
Staff	43	19	21	17
Overall	*24*	*36*	*16*	*24*

Methods Used to Give Information on Productivity
(Percentage of Respondents)

Table 13

3.7 Frequency of Updating Information on Productivity

The reason for the question relating to frequency of updating information was to to try to estalish the extent to which productivity measurements are being use for the immediate control of the service operation. If this were the case it might be anticipated that the frequency of up-dating would be high at staff and supervisory level.

The results are shown in Table 14 and they indicate a trend depending on level in the service organisation with those at board and senior management levels being more likely to receive productivity reports on a monthly cycle and middle managers and supervisors also having a weekly and daily cycle. Staff fall outside of the trend and in some cases are treated similarly to the senior levels and in others more like the lower levels.

However it is only at supervisory and staff level that there are any reports of information being updated on an hourly basis. This suggests that the measurements are used as an immediated control mechanism. It would be interesting in hindsight to know the types of measures which are used in these circumstances. However respondents were asked to identify the method of displaying information for the hourly cycle time or less. The replies indicated an overwhelming use of computers as the method of display which are in some case projected on large displays.

	Hourly (or Less)	Daily	Weekly	Monthly	Annually
Board Members	1	4	21	64	10
Senior Managers	1	9	37	48	5
Middle Manager	2	24	35	34	5
Supervisors	8	25	28	33	6
Staff	5	19	25	45	6

Frequency of Updating Information on Productivity for Recipients (Percentage of Respondents)
(Board Members n=107
Senior Managers n=118
Middle managers n=116
Supervisors n==107
Staff n=96)

Table 14

3.8 Use of Data Envelopment Analysis Techniques

The aim of the question was to attempt to quantify the extent to which new techniques like Data Envelopment Analysis were being adopted. The responses indicated that of those who replied only 4% were using this technique. Where it was not being used the respondents who identified a reason (ie about 50% of the total respondents) gave the following as reasons. First lack of knowledge of the method (60%), inappropriate for their operation (20%), and (5%) said they were considering the introduction of DET.

3.9 Summary

The responsibility for measurement of productivity rests in most organisations with executive managers often assisted by specialist departments. Actual measurements of productivity are included by a majority of organisations in their overall measures of performance although its is surprising to find them missing for any. The actual measures of productivity do show some correspondence with the expectation of a mix of actual output/input measures and the more operational focus of input costs, utilisation, and efficiency. The numbers of responses do not permit a detailed analysis of the the correspondence of the measurements with the type of service. For example, it might be expected that a standardised service lends itself to the measures of meeting time standards which are easier to make whereas customerised service would rely more on aspects of effectiveness ie completion of projects on time and error freeness.

The reporting of productivity raises more questions than are currently answered. To what extent are the measurements used for control rather than just being included in reports? Is a high frequency of update associated with direct control and is this associated with visual and verbal communication? To what extent is a single measure used as the main control parameter as against a range or aggregated index?

4. PRODUCTIVITY IMPROVEMENT

4.1 Introduction

The aim of this section was first to identify the factors which managers find make the improvement of productivity difficult, second to attempt to establish which methods are used to improve productivity and their relative usefulness, and third the role of technology in improving productivity in services. Finally respondents were asked for their statements relating to the challenges for the future.

4.2 Barriers to Improving Productivity

Respondents were asked to rank their top five factors from a list of eleven factors which appear in the literature as factors which might impede improvement in productivity. The results are shown in Table 15 analysed according to an average of all ranking and as a weighted average.

Factor	Ranking 1	2	3	4	5	Average	Weighted Average
Lack of meaningful measures of productivity	27	17	7	15	10	15	18
Organisation of work	12	20	22	14	9	15	16
Frequent changes in demand for services	12	25	10	13	6	13	15
Cost of gathering data	8	12	17	12	14	12	12
Lack of clear business targets	14	3	9	9	10	9	9
Poor supervisors	6	7	11	6	6	7	7
Frequent changes of staff	6	7	3	4	10	6	6
Frequent changes in services offered	4	3	9	4	9	6	5
Frequent changes of methods	2	2	4	9	10	5	4
Union resistance	8	0	5	4	3	4	4
Lack of interest at senior level	1	4	3	10	13	6	4

Barriers to Productivity Improvement

(Percentages, Averages & Weighted Averages)
(Factor 1 n=103
Factor 2 n=98
Factor 3 n=90
Factor 4 n=78
Factor 5 n=69)

Table 15

The responses show the top three or four reasons as being lack of meaningful measures, organisation of work, frequent changes in demand, and the cost of gathering data, whose weighted averages were 18%, 16%, 15% and 12% respectively. Lack of clear business targets at 12% was the next factor.

These results are perhaps not unforeseen but if they are representative for service organisations as a whole they give direction of the work which needs to be addressed to bring about improvements. The lack of meaningful measures restricts both the ability of managers to know the status of their operations with regard to productivity and thereby fails to identify the drivers for improvement.

The changes in the organisation of work presenting a barrier perhaps is associated with changes resulting from the ways in which people are required to work together and to take responsibility for their own work. It is interesting to note that frequent changes in

methods was very low in the order suggesting that there may be problems in getting things right to start with. Consequently it may be inferred that respondents are not concerned with changes at the individual level but more fundamental structural changes in the ways of working. However even within this scenario one might have predicted that frequent changes of staff would have appeared further up the listing. Perhaps this is a result of the sample under investigation and it would require further investigation to establish if those sectors with high staff turnover such as hotel and restaurants would still reflect these findings. Anecdotal evidence suggests it would not be so.

The inclusion of frequent changes in demand as a major barrier to productivity improvement is not unexpected. Where demand changes frequently and if the changes are irregularly it makes the balancing of the capacity of the service operation with the demand that much more problematic.

Cost of gathering data and the lack of clear business targets were identified also to be of importance as barriers. It would be interesting to know if there exists a link between these two factors and the lack of meaningful measures and whether the lack of meaningful business objectives make the establishment of meaningful productivity measures more difficult. Also does the difficult of finding meaningful measures increase the cost of gather data?

It is perhaps interesting that the factors which might be classed as people factors appear low down in the rankings as barriers to productivity improvement. Lack of interest of senior management, poor supervisors, union resistance all fall in this category

4.3 Methods of Improving Productivity

Respondents were asked about the techniques and methods used in their organisation to improve productivity and as an ancillary question asked to rank the three most useful. The question aimed to identify the extent to which traditional work study techniques are being used and the spread of newer approaches for improving quality and productivity and time productivity. The distribution of the use of techniques by sector is shown in Table 16.

The responses illustrate that not surprisingly many organisations use more than one technique and that all of the techniques are exmployed widely except those applying just-in-time approaches. Even though the numbers do not permit statistical analysis the use of skills training would seem to be the one approach which is favoured by a majority of those answering the question.

Sector	Numbers of Respondents						
	A	B	C	D	E	F	G
Banking	6	9	18	0	7	12	4
Insurance	10	9	9	2	7	13	4
Professional Services	10	5	6	0	10	18	6
Medical Services	2	3	9	1	2	5	0
Public Services	6	8	2	1	8	14	3
Hotels & Restaurants	2	2	2	0	2	5	2
Transport	10	8	6	0	11	14	4
Distribution	3	6	4	2	5	7	0
Retailing	11	5	4	0	6	9	4
After Sales Service	0	0	0	0	0	2	0
Telecoms	3	2	2	1	1	2	1

Key

A Time Measurement
B Activity Sampling
C Quality Circles
D Just-in-Time Techniques
E Method Study
F Skills Training
G Pre-determined Time Data

Use of Techniques to Improve Productivity by Sector (Numbers of Respondents)

Table 16

Other approaches not included in the listing included incentive payments and bonus schemes.

The more specific question relating to the most effective techniques for improving productivity produced the results in Table 17. The weighted average suggests that most respondents regard skills training as the most effective although the traditional techniques of work study are of significant importance. The other techniques which were offered as alternatives in many cases could be viewed as falling within the classifications listed. However in addition the importance of communication and staff motivation was mentioned by a number of respondents and one indicated the link between understanding capacity planning and productivity improvement. Somewhat surprisingly there was not a marked reference to the use of technology as route towards improving productivity even though it featured as the subject of the subsequent series of questions.

	Ranking 1	2	3	Average	Weighted Average
Time Measurement	16	16	17	20	17
Activity Sampling	11	14	23	15	13
Quality Circles	12	17	16	17	14
Method Study	21	22	16	25	21
Skills Training	36	30	25	39	32
Pre-determined time data	4	1	3	3	3

Usefulness of Techniques for Improving Productivity
(Percentage and Weighted Averages of Respondents)
(Factor 1 n=91
Factor 2 n=87
Factor 3 n=69)

Table 17

4.4 The Role of Technology in Improving Productivity

The series of questions relating to technology and technology improvement sort to gain an impression of the importance of technology for improving productivity and the type of technology which is most likely to give the desired improvement. Also respondents were asked to identify the aspects of technology which interfere with improving productivity.

An overwhelming number of respondents (80%) indicated that productivity improvement is very important in their organisation. Aspects of information technology were the examples given of the type of technology which most would be using to improve productivity. Emphasis was placed on improved accuracy, availability, and speed of handling information. Electronic data interchange (EDI) was referred to by a number of respondents. In those sectors in which the operations involve handling of materials the introduction of mechanical handling, and sorting equipment, and the continued mechanisation of manual tasks were mentioned.

The problems presented by technology which might hinder the achievement of the expected productivity gains fell within the categories of:

* Training of staff
* Costs of the technology (and by inference training)
* Compatibility of different systems
* Reliability of the technology, particularly software

4.5 The Changes in Approach and Challenges of Managing Productivity Improvement

Respondents were asked their view of the changes in managing productivity and the main challenges facing those who have to improve productivity and the likely changes for the future.

The issues identified were fairly common across the sectors. Many respondents raised the link between quality and productivity and the need to maintain or raise customer service while improving productivity. The influence of competition was seen a factor making this more difficult.

The affect of quality programmes was raised in relation to reduction in errors , and the implementation of quality initiatives like total quality management programmes and the procedural discipline of standards like BS5750.

The role of technology in improving productivity was again indicated confirming the answers to the previous questions.

The main challenges for the future can be summarised as:

* Increased business competition

* The rate of change managers have to cope with (by inference this is increasing).

* Gaining the commitment of staff and increasing their skills to carry out their tasks while at the same time adjusting cultural attitudes to attain levels of customer service.

* Containing costs (and by inference maintaining service levels) and utilising expensive resources to the full.

* Improving data collection and appropriateness of productivity measurements.

* Improving throughput efficiency.

4.6 Customer Care and Total Quality Management Programmes

Respondents were asked to say if they had customer care programmes or total quality management programmes in operation in their organisation. The results of the replies are shown in Table 18.

Sector	Customer Care		Total Quality	
	Yes	No	Yes	No
Banking	11	2	6	6
Insurance	10	4	6	7
Professional Services	15	13	11	16
Medical Services	2	3	0	5
Public Services	12	3	4	10
Hotels & Restaurants	6	1	2	4
Transport	13	5	11	7
Distribution	5	2	4	2
Retailing	7	1	3	5
After Sales Service	2	0	1	1
Telecoms	2	0	2	0

Presence of Customer Care and Total Quality Management Programmes (Number of Responses)

Table 18

It is clear that many more of the respondents have customer care programmes than total quality management. This corresponds with other findings that service companies have tended to introduce customer care programmes first and then to follow with total quality.

4.7 Summary

Productivity improvement would seem to be most inhibited by the organisation of work within the service delivery system and finding the most appropriate measures for productivity particularly when non-standard and complex tasks are being undertaken and in a climate of changing demand and where customer service levels must also be met at the same time.

Traditional work study methods help but are not the full solution. Technology has a role to play but only in association with the part played by service personnel.

The challenges for the future are to make the best use of systems as they are developed and to link them to needs of the organisation as a whole in meeting both productivity and customer service quality goals.

5. DISCUSSION

5.1 Introduction

This survey is the first that the author is aware of which has attempted to examine specifically the state of management of productivity in services. The results while not being conclusive do indicate there is a great deal of work which needs to be done to assist organisations to improve productivity. The link between quality and productivity has been made by many of those who responded.

Managing quality and customer service and the balance with resource productivity can be expected to be a major focus for operations managers at the present time because of economic recession and increased competition. Managers in many of the organisations reported they have been coping with increases in the number of services they offer and increasing demand. Even if demand should start to fall this will bring with it additional pressures of maintaining resource productivity.

5.2 Coping with Changes in Demand

Coping with changing demand while improving resource productivity and service levels seems fundamental to success. The occurrence of reliability and responsiveness as the top two in the ranking of customer service requirements lends emphasis to the importance of capacity management for the operations managers.

While the number of responses to the questionnaire did not permit detailed statistical analysis there appears a strong correlation between the type of service and the customer service requirements. More standardised services are strongly correlated with reliability of service, responsiveness and availability. The additional strong correlation between availability and the time period for demand changes giving most problems being hourly or daily reinforces the importance of managing aspects of time of service delivery.

5.3 Quality and Customer Service

There are indications of service organisations tackling aspects of customer service and total quality programmes although these are by no means universal and with customer care programmes being the most prevalent. It is not possible from the present study to comment on perceived effectiveness of these initiatives. Their presence can be seen for the good if only because both start a process of cultural change for improvement in performance.

5.4 Measurement of Resource Productivity

The results show that for the measurement of resource productivity there are a wide range of different indicators of productivity employed as a substitute for true productivity measurements of output to input as shown in Section 3.3. Also the lack of meaningful measures was seen as the highest factor inhibiting productivity improvement.

The lack of meaningful measurements suggests the need for a more detailed examination of measuring systems linked to the requirements of the service type. The more standardised a service perhaps the easier it is to suggest measurements aligned to work

standards whereas for customised services these are less applicable and the cost and utilisation and throughput efficiency are likely to be more effective.

There is also the question of the size of the unit for which resource productivity is being measured and the type of measurement. While this was not explored in the present survey it is clearly an issue. The larger and more diverse the organisation being measured the more appropriate is an aggregated measure of output to input like sales/employee. Comparison of resource productivity between a number of service outlets within a service network is a common problem. The use of a newer techniques like data envelopment techniques does not seem to be widely used although in several sectors the use of detailed work study standards are use to set targets of each unit.

5.5 Responsibility for Productivity Management

Resource productivity management might be considered to entail responsibility for setting targets, instituting measurement, assessing progress, and initiating actions to control deviation against targets and implement continuous improvement.

It is clear from the results that at senior levels in service organisation there does not appear to be a corporate responsibility for resource productivity management nor do individuals in these positions always receive information on productivity. This suggests that clear productivity targets are not always being set in many cases at a corporate level. The responsibility seems to be devolved to senior and middle managers in organisations to carry out the task. This situation might be expected to exacerbate the difficulty with choosing meaningful measurements as they are not linked to other business targets.

The receipt of information on productivity and the frequency was not linked to the size of the unit of resource being measured. However it can be inferred from the results that managers of a network branch receive information more frequently than do the board members or senior managers controlling a network or series of service networks. This raises questions as to the purpose of reporting either for information or control.

On the involvement of staff in productivity management the results indicate that there is a greater tendency for staff to be the ones assessed rather than for this to be an activity they actively participate in either by measuring their own performance or by being able to respond to information on productivity given either verbally, on display, or written reports.

There is an indication that for a not insignificant number of organisations the responsibility for productivity measurement is devolved to the specialists who measure and report but then in the words of one respondent, "One Senior Manager gets it (ie information of productivity) -me- no one else seems to care".

5.6 Improving Resource Productivity

The main factors which were identified as barriers to improving resource productivity were associated with the difficulty of chosing appropriate measures for productivity and the way work is organised in circumstances of frequent changes in demand. These results are closely linked reflecting as they do the importance of the design of the operating system for delivering the service (or more likely the mixture of services) and managing capacity.

The use of traditional approaches to improving productivity of work study and skills training for those performing tasks appears to widely employed. The associated benefits which have been seen in the manufacturing environment from the use of quality circles

and their like do not appear to be widely employed in the service sectors. Nor are approaches to improving time productivity like "just-in-time" which seek to improve throughput efficiency common. Where they are evident in the banking and insurance sectors they are by inference more likely to be associated with back-room operations.

The majority of respondents indicated that they are expecting technology to produce improvements in productivity. The analysis did not permit a view on whether the use of technology is as a substitution of labour by technology to improve labour productivity (thereby increasing capital productivity) or whether the improvement is aimed at throughput efficiency. Clearly again the equation is more complex and it is easy to see that the use of information technology is one factor capable of enabling a better control of capacity in line with demand and thereby meeting the pre-requisites of customer service and resource productivity targets.

5.7 Questions for Further Investigation

The results of the present survey have raised a number of question and areas which require further investigation. The main ones are the following:

* What are the best approaches for service organisations to address issues of managing capacity to control both customer service quality and resource productivity?

* How can resource productivity measurements be devised for services which reflect in a meaningful way productivity for different sizes of units within a complex service organisation?

* How can service delivery systems for services be designed which permit the best resource productivity throughout the system? This may mean trying to separate most effectively standardised and customised aspects of a mixed service offering. Such an approach may increase the probability of having appropriate measures for each type of service delivery.

* What is the relative role of organisational responsibility, employee involvement and technology in improving resource productivity?