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AN ESSAY ON THE DIMENSIONS AND COMPONENTS OF  
CUSTOMISATION IN SERVICE OPERATIONS MANAGEMENT\*

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Abstract

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There is a scarcity of guidelines that trigger the adoption of Customisation, a concept frequently brought up in Service-related Operations management. This paper suggests a comprehensive framework of the Customisation process and its implications for Service Operations Management. We identify the two most outstanding approaches of Customisation, based upon the concepts of Customers' needs and Wishes. Main differences between them and their respective effects on the design of the Service Operations Strategy are discussed. Second, we identify the four dimensions (Time, Space, Volume and Variety) which explain the two mentioned approaches and that may address the process of implementation of the Operations Strategy.

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Keywords:

Service Operations Management, Marketing, Customisation, Focused Factories, Flexibility

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# **AN ESSAY ON THE DIMENSIONS AND COMPONENTS OF CUSTOMISATION IN SERVICE OPERATIONS MANAGEMENT**

## **INTRODUCTION**

Companies belonging to the service sector have increased the customer orientation of their operations management along the last years. They are realising the tremendous importance of customer satisfaction, and thereby they are looking for ways to assure the fit with customer expectations (Sampson, 1996, 601).

According to Parasuraman et al. (1985), and Anderson and Sullivan (1993), every customer has several expectations about different service experiences. All them come to the service organisations with some expectation of what is likely to occur. Anytime the customer perceives that there are service attributes with performance levels falling below expectations, negative disconfirmation (or dissatisfaction) takes place; similarly, when the performance level goes up higher than expectation, a positive disconfirmation appears. Sampson (1996, 606) states that customer evaluates the service provided based on his/her (dis) confirmation, being this evaluation a judgement of the quality of the service delivery of the company, and is closely tied to satisfaction. Therefore, service firms have to determine first which factors contribute the most to increase customer satisfaction. Their Marketing Departments need to identify those outstanding characteristics of a given service that represents an important group of the target customers the firm is trying to attract and/or withhold (Lewis and Klein, 1984). These firms should design their operations processes considering such characteristics, so

building the required capabilities for delivering services that satisfy customers while contributing to the profitability of the companies.

Several authors have suggested Customisation as the best way to achieve the highest levels of customer satisfaction. Customisation is a concept frequently brought up in Service-related Operations Management. It is defined by Fitzsimmons (1994, 22) as "*a marketing variable that describes the ability of the customer to affect personally the nature of the service delivered.*" From the point of view of the Operations Management function, we define Customisation as the process of adapting products or services to customer preferences. Then, we might assume that service firms that offer customised services are able to modify the patterns of its delivery operations as customer's expectation changes. This means that Customisation requires a delivery system characterised by its flexibility, as opposed to the more rigid type of service that describes the standardised service firms. It also implies that it conditions the design of the service delivery system, which makes Customisation a strategic choice of the service operations strategy, thus affecting to both the content and the process of strategy formulation. Since the aggregated requirements imposed by the Customisation focus could exceed the firm's resources or availability, it is important to evaluate and compare such requirements with the firm's available resources before adopting a Customisation Strategy.

We suggest a systematic procedure to deal with its adoption and implementation. First, companies need to identify the conditions facilitating that Customisation efforts become increasing customer satisfaction levels. Secondly, they have to carry out a thoughtful analysis of the collection of advantages and/or disadvantages associated to the company's alternative Customisation strategies. It

should consider both the complementary criteria from the organisational departments, -i.e., finance, marketing, and operations - and the corporate strategic goals and objectives. Next, the firms make a decision concerning which Customisation alternative would they adopt and implement, which means a given commitment of resources, people and effort along a settled time horizon. Finally, companies monitor and control the implementation process and check for possible deviations to appear, which they try to solve as timely and efficiently as possible. Figure 1 depicts this procedure. It also pretends to illustrate the complexity surrounding the management of services, which in many cases leads to a great deal of overlap between marketing and operations management (Armistead 1992, 12).

[Insert FIGURE 1 about here]

Our paper tries to bring to the limelight some possible explanations for the choice of operations strategies linked to Customisation, which are more congruent with and part of the marketing effort. So far, the "manufacturing capabilities" of the firm, resulting from strategic investments, are deployed as the answer to market analysis efforts. We suggest a framework, labelled as the NOC-WOC matrix, which pretends to serve as a decision-aid tool for managers and academicians. It helps them in evaluating whether or not the intended, and/or realised efforts (following the terminology of Roth and Van der Velde (1991)) are matching the competitive priorities of the firm.

According to this purpose, the organisation of the paper is as follows. We start with an overview of literature on Customisation, followed, secondly, by an explanation of its operations management related issues. Third, we provide a detailed characterisation of the dimensions guiding the design of the content of the Corporate Customisation strategy, emphasising their effects on the content of the related Service Operations Strategy. Fourth, we present and discuss our main contribution, the

suggested NOC-WOC matrix. It explores how the design of the service operations systems differs as companies wish to fulfil diverse customer expectations. It also illustrates the linkages between every customisation option in the matrix and the service operations competitive priorities. We conclude with several examples of how different companies will fit in the matrix, proposing several research and managerial implications.

## **CUSTOMISATION BACKGROUND**

Market analysis is an important prerequisite for strategy formulation in marketing and operations. In particular, when considering the service sector, Porter (1980) stated that it is essential to consider market conduct, since it is a cardinal intermediary in the link between strategy and performance.

The management of the way a customer perceives a service experience is vital to the production of customer satisfaction with the service package. There is the idea that customer satisfaction represents the difference between the customer's prior expectation of what he/she would be like. It is the role of Marketing to create an expectation of the service for the customer, which must be matched by the capability of the operations to deliver the service in a way that meets the expectation. The process is not easy since service experience use to have a unique nature and to be essentially subjective (Armistead, 1992, 54).

Customer will be satisfied when, after service delivery, he/she is convinced that he/she holds a better position in terms of economic value than before consuming such service. If service results do not improve customer perception of value after service delivery, he/she will not reach the psychological state of satisfaction. So far, satisfaction can be measured in terms of value perception. If consumers

perceive service value ex-ante as smaller than service value ex-post, they will be satisfied. When the opposite situation takes place, customers will be unsatisfied. Hence, companies have to develop ways to identify customers perceived service value ex-ante. Then, firms have to convince them of the superiority of the ex-post service value, while, at the same time, a special effort is required to withhold customers along the service delivery process. Customisation will only lead to satisfaction when the adaptation of the service, as well as its perception by the customer, has increased the level of fulfilment of the customer expectations.

It is very difficult to establish standards of performance for a given service operation, and it may evolve almost impossible when these standards are settled based upon ex-ante expectations rooted on customers wishes. Actually, it happens sometimes that customers do not wish the service that the company offers to them, even in those cases where they do need the received service. This is the situation when a patient goes to a Hospital to fix his/her broken elbow. Even in the case that this patient does not want to be X-rayed, the Doctor will asked for a radiograph to be taken. This case illustrates that maximising customer satisfaction does not always imply to accomplish his/her desires, but his/her needs instead.

The Needs Oriented Customisation (NOC) and Wishes Oriented Customised (WOC) concepts are brought now into the light to reflect two opposite approaches of the Customisation trend. These concepts try to answer to the question of how should the company made its choice as regards those features belonging to the service package that, if customised, would report the maximum customers satisfaction levels. Secondly, but equally important, it is necessary to determine how the company should organise its “production capabilities”, mainly through back and front offices, so it enables it to

achieve the required kind and level of customisation.

Most relevant literature concerning Customisation says nothing about these two concepts. However, we are strongly convinced of the appropriateness of incorporating them to the body of knowledge that both marketers and operations managers working for service companies use to manage as a framework. Different reasons justify our conviction. First, service encounters do not have the same temporal dimension, it depending on several factors, like the type of service, how frequently is the service demanded, how is the service operations system organised to deliver the service, etc. Consequently, customisation initiatives can be classified according to their temporal dimension. Second, some services are vital for customers, in the most literal sense of the term, thus meaning that the service encounter has to be organised according to the needs, and even urgency, of every customer. It also happens that customers require the delivery of services according to their sudden impulses and caprices. Obviously, not only different key elements would be required to fulfil these two types of customers expectations, but the consequences of deceiving customers would diverge enormously as well. Therefore, customisation efforts can be classified according to the main reasons leading customers demands for service, and also depending on the effects of failure to meet customers expectations. Why customers asks for a service not only conditions how the service has to be delivered, but how long should last its effects. Hence, a second temporal dimension of customisation emerges: the one linked to the durability of the service, whether or not it success in accomplishing customers expectations.

We define the Needs Oriented Customisation Approach, (NOC), as a "customisation effort that applies to the segment of services that may provide *real solutions* for *real needs*". We consider in this paper that a *real need* uses to have a capital importance for the "survival" and quality of life of the



customer. It requires deep knowledge and expertise on the part of the service provider to be satisfied. By real solution, we consider any solution that is delivered as soon as the customer demands it, but whose effects may last long term. Those features of the service package that are most relevant for delivering these solutions are those more closely located to the core of the service concept. Some services as Health Care, Professional Services or Education, constitute examples of NOC initiatives.

Wishes Oriented Customisation, WOC is the approach that we consider most adequate when dealing with customers that demand services because of a sudden desire. Their behaviour doesn't respond to a *real need*, but to impulsive wishes of getting things, experiences, sensations, etc. This impulse disappears as soon as the service encounter takes place, so that the effects of the service experience fade away very soon. Furthermore, customers used to be very interested in all the ancillary elements that accompany the core of the service concept. Sometimes, they are even more interested on the wrapping than on the core element, like is the case of being allowed to eat pop-corns while watching a movie. These facts make that customer satisfaction not only depends on how the core service is delivered, provided that it fulfils a minimum level (i.e., whenever the service conforms to its specifications), but on how all the complementary offerings are delivered. Restaurants, Entertainment Business, Travel Agencies, etc., should address their customisation activities towards the satisfaction of customers' wishes. Figure 2 tries to mirror these reflections in a schematic way.

[Insert FIGURE 2 about here]

To sum up, we propose that services wherein advice results in a vital element of service delivery are eligible for Needs-oriented Customisation (NOC). On the contrary, service companies that base their activities in customers' impulses that obey to wishes or desires are eligible for Wishes-oriented Customisation (WOC).

Service Firms must decide whether they position themselves towards NOC or WOC in the continuum shown by Figure 3. This is a strategic decision, since it will have much to do with the firm's competitive advantages (Deane et al., 1991, 329). Choosing between NOC and WOC means focusing on a coherent set of tasks, as dictated by the market requirements. Different types of service industries are placed along the continuum. Health Care Services, Education, Professional Services and Banking and Insurance remain closer to the NOC extreme, while Airlines, Restaurants, Hotels and Media are closer to the WOC side. Firms can shift along this continuum. For example, we can consider most restaurants as WOC positioned, since most people visit them because of their desire to eat a determined kind of food, not because eating *there* is a basic need. We might consider an individual who suffers from high cholesterol problems going to a restaurant and ordering a pair of fried eggs with bacon. He/she should not eat that, it might even be harmful for his/her health, but it is very likely that the waiter will not draw any inconvenience to serve the dish to the customer. We can also imagine a situation where another restaurant has the policy of checking customers' health -by instantaneous blood analysis, for instance-, before they can even make their orders. After the analysis, they offer the customer a menu that suits his/her health convenience. In this latter case, the restaurant would be placing itself towards NOC, but this is not the most likely situation we will meet with when going out for dinner.

[Insert FIGURE 3 about here]

As production and consumption of service tends to be simultaneous, the service-producing unit or delivery system can be seen as part of the marketing mix. This obeys to the fact that *"a service operation that satisfies customers and conforms to financial measures of success must be an integration of the skills from the various discipline areas, reflected in the design and the subsequent*

*management of the business. Success will also entail being able at least to match customers' expectation of the service package with what is given by the service organisation"*(Voss et al. 1992, 51). This suggests that a market analysis is required to identify what are the preferences of the NOC and WOC customers of every customised service firm. For NOC service customers, the diagnosis process focuses on their customer needs. In this process, customer remains as a passive receiver of the service. He/she has little decision power as other professionals decide the type of service that he/she needs. The customer is checked in order to diagnose his/her needs, but he/she might not even be asked for opinions. One clear example of NOC diagnosis is Emergencies Health Service at Hospitals wherein injured individuals are given all necessary medical services as quick as possible without being asked for personal wishes. A similar example appears with Legal Services, where the diagnosis process verifies customer's legal situation by different means, to solve the legal problem of the customer. He/she is not asked for his/her wishes, as the legal process does not depend on it.

The WOC diagnosis process focuses on customer wishes. In this case, customer desires are a vital part of the diagnosis process. Customer are involved in the process, since they are expected to make explicit what he/she wants or wishes, so that WOC service firms are able to adapt their service operations delivering system to every individual customer desires. For instance, a decoration professional must know customer's opinion in order to reach customer's satisfaction. Therefore, service delivery relies heavily in customer's wishes. Thus, marketing has to identify, or create, the different markets and demands, and the service operations focus is based on the need to organise so that those differences would be met. Then, it is possible that, under the umbrella of Customisation, companies might address their customers to service experiences that are sold as unique and perceived as active

contact experiences, but that have been delivered following a standardised process. As we will discuss later this can be the most likely case for WOC Customisation.

## **CUSTOMISATION FROM THE PERSPECTIVE OF SERVICE OPERATIONS**

### **MANAGEMENT: the Design of the Content of the Service Operations Strategy**

The Customisation concept has appealed to several authors. Since it means different types of interaction, it presents a range of challenging choices for the design and subsequent operation of the service business (Voss et al. 1992, 4). Among the firsts ones, Maister and Lovelock (1982) used the concept of Customisation to classify service industries. Extent of Customisation and Customer Contact, -the physical presence of the customer in the service system (Chase, 1981)-, are the two variables used for distinguishing among the service industries: Factory, Job Shop, Mass Service and Professional Service (See Figure 4).

[Insert FIGURE 4 about here]

Later, Schmenner (1986, 25) suggested a classification of service industries according to the Degree of Interaction and Customisation and the Degree of Labour Intensity. Schmenner's first dimension includes both Maister and Lovelock's dimensions and then, he contrasts it to a cost structure ratio that he names Labour Intensity. Schmenner obtains four types of service industries labelled as: Service Factory, Service Shop, Mass Service and Professional Service (See Figure 5).

[Insert FIGURE 5 about here]

Coming back to the main goal of service companies, customer satisfaction, it will only be achieved when the service delivery system is structured to meet specific expectations of customers relative to its strategic positioning (Roth and Jackson, 1995, 1724). More specifically, as firstly suggested by these authors, the essential question is what generic operations are among the strategic

determinants of service quality. Berry et al. (1991) defend that the answer is closely related to the process of translating customer requirements and market conduct in terms of manufacturing capabilities, so that different market segments require diverse operations capabilities.

Lovelock (1983, 15) pointed out two dimensions of Customisation. These dimensions are *"The extent to which service characteristics are customised"*, and *"The extent to which customer contact personnel exercise judgement in meeting individual customer needs"*. We believe that the first one concern to all the assets-based service components that are specifically designed to meet customer needs to a certain extent. It also relates to the firm's available resources that will be allocated to the several (customised) versions of a given service, as well as to which versions are they. This is the case where a telephone company offers its clients an automated "yellow pages" system, or a hotel whose customers may choose a given set of room's attributes like location, number of beds, bed-sizes, or even curtains colour. This structure, very well known as the "brick and mortar", includes the technological capabilities of the company, mainly equipment, knowledge enhancing technology and institutional knowledge. In its broadest sense, technology *"reduces the inherent complexity in service delivery processes, broadens the scope and coverage of service options with scale economies, enhances employee capabilities, and engages customers in the delivery process"* (Roth and Jackson, 1995, 1724). Institutional knowledge influences service quality directly because customers tend to base their judgments on process (or delivery system) attributes and outcomes (Fitzsimmons and Fitzsimmons, (1994), Roth (1993), and Bullard and Cronin (1993)). So far, given its business process capabilities orientation, we will assume that this dimension is closely tied to the WOC approach.

The second Lovelock's dimension refers to the ability of the company's personnel to adapt the offered service to customer's requirements. It is meaningful to take this dimension into account since a

poor impression created by service contact personnel can make customers decide not return, no matter the remaining attributes of the service. Individual knowledge affects customer satisfaction because it helps to diminish organizational uncertainty, reducing process variability, and improving the firm's ability to customize. Quinn (1992) and Sulek et al. (1995) argue that superior qualified staff is more likely to deliver NOC services. This dimension relates to organisational routines and expertise: it heavily depends upon the extent of personnel endowment to act and take decisions. If service personnel are allowed to chose -and when required, to modify-, organisational routines as changes in customers' demands for service require it, the firm will be customising on a personnel-base. Examples of these dimensions include Professional Services, Education and/or Preventive Health, Specialised Bookshops, etc. Figure 6, which we have illustrated with examples of our own, shows Lovelock's classification of services according to the both mentioned dimensions.

[Insert FIGURE 6 about here]

We have developed a new integrative framework that draws from previous Schmenner (1986,25) and Lovelock's (1983, 12) matrices. It is depicted by Figures 7.1 and 7.2. The first one (see Figure 7.1) classifies service industries according to NOC, WOC and the Degree of Labour Intensity. In this case, the right hand side of the referred Schmenner matrix (service firms with a high grade of interaction and Customisation) can be sub-divided according to both Customisation types already seen (NOC and WOC). This way, we have four quadrants that delimit NOC and WOC Service Shop as well as NOC and WOC Professional Services. The first quadrant shows NOC Service Shop and all those services whose main activity mostly depends on assets are included, that is to say, all those with a low grade of labour intensity. Health Care or Repair Services are clear examples. If we focus these low labour intensity Services towards WOC, we will obtain WOC Service Shops which also depend on

high assets investments but in this case wish-oriented. Media services and Amusement Parks are examples of this kind of Customisation. In the High Labour Intensity NOC services we find the classic Professional Services such as Doctors, Lawyers, Accountants or Architects, while the same costs structure with WOC gives us as result Travel Agencies and Fairs, Expositions or Conference Arranger services.

Figure 7.2 shows a similar classification with services directed at people or directed at things/businesses. In this case, we can distinguish services oriented to people in NOC as those directed towards physical and mental functions and activities that are indispensable for perfect development and surviving of people. Examples of these are Health Care, Exercise Clinics or Education. The same for WOC services are those directed to improve those physical and mental aspects not indispensable for people development and surviving. Passenger Transportation, Beauty Salons, Restaurants or Broadcasting and Information Services are examples. Services directed at things with NOC represent the development and/or improvement of those basic circumstances that allow the customer to keep or increase its economic or social status. This kind of services is carried out by lawyers, accountants, transportation and industrial equipment services. Same services for WOC fulfil wishes that improve some aspects of perceptive nature for the individual in order to increase his/her life quality from the psychological point of view. Decorators, Pets Beauty Salons, or Car Modifiers are examples.

[Insert FIGURES 7.1 and 7.2 about here]

Deane et al (1991) have demonstrated that variables reflecting the interdependency of manufacturing/service and marketing strategies are the best predictor of firm success. Other researches, like Heskett et al. (1990), Lovelock (1988), Bowen et al. (1990), or Chase and Hayes (1991) have also demonstrated this asseveration.

Skinner (1974) recommended that the corporate strategy, that reflects the corporate marketing plan, establish the patterns that lead to the different focused service companies. Roth and Van der Velde share this point of view, when they suggest that a service strategy must address how operations will support and mesh with the competitive marketing thrusts of a business (Roth and Van der Velde, 1991, 305). Unluckily, there is a scarcity of literature explaining how managers in service organisations systematically differentiate their businesses and how these advantages are deployed.

After analysing NOC and WOC dimensions, it is necessary to develop a framework that explains how service firms should organise its activities so that marketing customised offerings are matched by the service operations system capabilities. We consider that the essential variables to analyse are those relating to the different processes and infrastructure used to support the NOC and WOC market segments. Berry et al. (1991, 365) propose that the key variables (or critical operations issues) that need to be identified are *process technology factors*, *volume factors*, and *infrastructure*. As regards the important variables coming from the marketing side, Berry et al. propose *market factors defining buyer behaviour*, and *time factors*. Drawing from these ideas, we distinguish four Customisation dimensions that condition the success of NOC and WOC initiatives. These dimensions are Time, Space, Volume and Variety.

The *Time Dimension* refers to the ability of the service firm to "produce" service just at the time the customer requires it. This ability implies the existence of an optimal service demand management. Service firms must be able to increase its service capacity at peak demand times. Information Technologies (IT) help service firms to improve Customisation Time Dimension (CTD). An example of high incidence in CTC is Customer Information System via Telephone in which customer gets on line all the information required at any time of the day 24 hours long.



The *Space Dimension* refers to the ability of the service firm to "produce" service just at the place the customer requires it. This ability implies for the service firm the need for an optimal management of the delivery system across the geographic area covered by the firm. The firm must be able to reach every spot of its potential service area by means of a well-designed logistics system. Information Technologies reduce the need of logistics systems for those services not requiring physical service action such as Plumber, Firemen or Physician. An example of high incidence in Customisation Space Dimension (CSD) is any fast pizza deliver service that compromises to deliver pizza anywhere inside its covered area.

The *Volume Dimension* refers to the capability of the service firm to deliver as much service as the customer requires. This implies that the service firm needs to have a very flexible delivery system. So far, it implies that the firm has to be able to increase the volume of services delivered, whenever required by the customer, so that it will not implies further complications or queue times for him/her. This dimension does not take into account service variety, but only the capacity to increase service quantity to the level required by the customer. An example of the Customisation Volume Dimension (CVD) is Medical Services, since they are given to patients as many times as they health conditions demand it.

The *Variety Dimension* refers to the capability of the service firm to adapt its services characteristics to those directly perceived by the customers as the essential features the service has to have. They may either be part of the Core Service or other added services that incorporate more value to the final service. This means that the service firm needs a flexible delivery system in the sense of being able to modify service or add new features to it in order to personalise it for the customer. Some examples of Customisation Variety Dimension (CVaD) are the possibility of choosing pizza

ingredients, use of specific medical instruments in Health service or the added feature of changing decoration in a hotel room.

Figure 8 shows how the Customisation Dimensions vary for NOC and WOC. In NOC service, professionals analyse customer needs, although it does not necessarily implies that customers have made them explicit. The analysis/ diagnosis process conditions the four dimensions in NOC. Initially, it is the customer who fixes the Time and Space Dimensions. However, after the diagnosis, the company will keep the reins of the required service encounters. In a sense, we may assume that a NOC scenario is very much related to a PULL manufacturing system.

The four Dimensions of WOC are build up as a process of answering customer wishes. It might appear that the customer fixes how the firm has to organise its service operations system in order to fulfil all his/her needs. It is like that in a way, since the company will have to identify what the customer wishes ex-ante, so that all the resources will be prepared to deliver the service on a timely basis. This means that the company who is in charge of the service delivery system as a whole, and that the market analysis will provide the required data for delivering the "wishes" to the customer. Therefore, service firms offering WOC initiatives start their activities by classifying the customers' wishes. Then, they look for the operations system that will enable them to maximise the satisfaction levels. Thirdly, they will display intensive marketing efforts to orient customers' wishes towards the "artificial" group of desires that the company is ready to satisfy. According to this sequence, we may assume that WOC approaches are very similar to the PUSH manufacturing environments.

[Insert FIGURE 8 about here]

Figure 9 shows different degrees of Customisation dimensions for different service industries. Each service industry has been graded in a Likert Scale from 1 to 5 depending on degree of Customisation (1 =Very Low, 5 =Very High) for each Customisation Dimension. The degrees are fixed according to the service delivery system characteristics.

[Insert FIGURE 9 about here]

Time Dimension for Airlines appears with a score of 3. The main reason is that flights take off only at determined times (generally adapted to highest demand schedules). There is no possibility, except for certain charter flights and for big groups of passengers, to choose takeoff times. Hospitals are graded 5 as the patient is taken care just at the time he/she needs attention (especially in emergencies) just as it happens in Professional Services. As for Repair Services, these have to face the capacity problem and queues delays as it is harder to give flexibility to the service during high demand times, that is why they are graded 3. Hotels and Restaurants tend gradually to cover existing demand at any time by making operations management more flexible, they are scored 4. Information Services are able to deliver on-line service thanks to Information Technologies (TI). They get the highest degree of 5.

Space Dimension in Airlines comes out with the lowest degree, as it is necessary for the customer to move to a determined place (airport) to consume the service. Health Care Services are more flexible according to the Space Component. They can move service towards the customer by means of ambulances or even doctors can go to patient location. They, therefore, reach the highest grade. Professional services reach 3 in the Likert Scale because depending on the kind of service, displacement of the professional to customer's location is or not possible. So, lawyers use to work in own offices while auditors or architects use to move to the service delivery place. Repair Services are

able to bring service to customers depending on the nature of the good to repair. Big or not movable goods (such as ships or industrial machinery) require displacement of the technician to the place where they stand, however it not that common for a car mechanic going where the breakdown car is. The same applies for household appliance technicians. Hotels, in this aspect, reach lowest grade, while catering companies reach the highest. Again, Telecomm Services, by means of new electronic technologies (Cellular Phones, Laptops Computers, etc.), reach the highest degree in this category.

As for the Volume Dimension, Airlines reach a medium degree, as they are capable to increase the quantity of service according to customer requirements but only to a certain extent. As it was said before, this component measures not only capability of providing more service to customer that requires it but also the capability for doing it just in time. Therefore, it is not always possible to fly from Madrid to New York and then to Los Angeles by express and spontaneous desire of the customer. Probably, it will imply new actions and queues for the customer before taking the new flight. It is seldom possible to consume all food or read all press as desired during the trip, as far as these goods are limited for the number of passengers. However, Hospitals reach the highest grade in this component as they are able to give the patient as much attention, medical services or medicines above initial provisions at the right time. Professional services are usually able to increase service capacity according to customer requirements without great waiting times or nuisances for the customer, all of that depending on the design of its service delivery system, this way they reach grade 4. It applies to Repair Services. Hotels and Restaurants face the problems of capacity constraints and raw materials stocks respectively when increasing service just in time, that is why they reach a medium grade of 3. Information Services reach the highest grade thanks, again, to Information Technologies.

Finally, Variety Dimension for Airlines is limited by the election between First and Second

Class and the limited range of food menus offered by the company. Again, the Time part of the Variety Dimension (being able to modify service characteristics at the right time) hinders Airlines from reaching a high grade of Customisation in this aspect. It might not even be possible to move to a different seat unless another passenger allows the change. That is the reason why they reach a grade of 2. Hospitals, again, reach the highest grade, as they are able to modify qualitative aspects that affect directly patient health. These aspects do not necessarily include aesthetics wishes of the patient about the service. Professional services, as before, depend for qualitative service modification on delivery service system. In this case, architects and designers, - due to the nature of their work-, reach the highest degree respect to lawyers. It is important to take into account that service Qualitative Components are more perceptible by customer when he/she is dealing with them for the first time than for the second one. They reach the same grade 4 as for Quantitative Component. Repair services find themselves in a similar situation as Professional services when customising Qualitative Component. Such component depends, again, on the service delivery system to satisfy customer wishes according to modifications of the repaired object at required time. They reach a grade of 4. Hotels and Restaurants can also make its service delivery system more flexible to increase Qualitative Customisation. Hotels can offer customers an options menu about room decoration, number of beds, situations, outdoor views, etc. while Restaurants can do the same with tables and food ingredients. This way, they also reach a grade of 4. Finally, Information services depend on qualitative options provided by IT. The possibility of choosing different languages, increase process speed or making communication interface more interactive with customers implies improving the Qualitative Component. This way, they are given a grade of 4.

## CONCLUSIONS AND FUTURE RESEARCH

The Customisation concept can be unfolded in different approaches and dimensions. These approaches and dimensions try to clarify and establish a recognisable pattern of service operations systems, so that any service firm can modify its pattern(s) in order to focus Customisation approaches. The framework described in this paper can help service firms to identify their position in the NOC-WOC continuum. It also helps managers to identify those elements linked to the operations management domain, which can be modified in order to reposition the firms according to the Corporate Marketing Plan. Approaches (NOC and WOC) and Dimensions (Time, Space, Volume and Variety) are perfectly combinable, since the customisation approaches clarify which kind of dimensions are more likely to be stressed depending on the specific service industry. The Dimensions help service operations managers to address how operations will support and mesh with the competitive marketing thrusts of a business (as explained by Roth and Van der Velde, 1991, 305).

Future studies will have to identify how these Dimensions guide the design of the process of the Service Operations Strategy and how this process is implemented according to the NOC-WOC approach that every firm adopts. A complementary research stream points towards analysis of those kinds of services framed either in NOC or in WOC. Furthermore, researchers and professionals would be interested in determine to which extent would some service industries be able to shift from one type of Customisation to another or to a combination of both.

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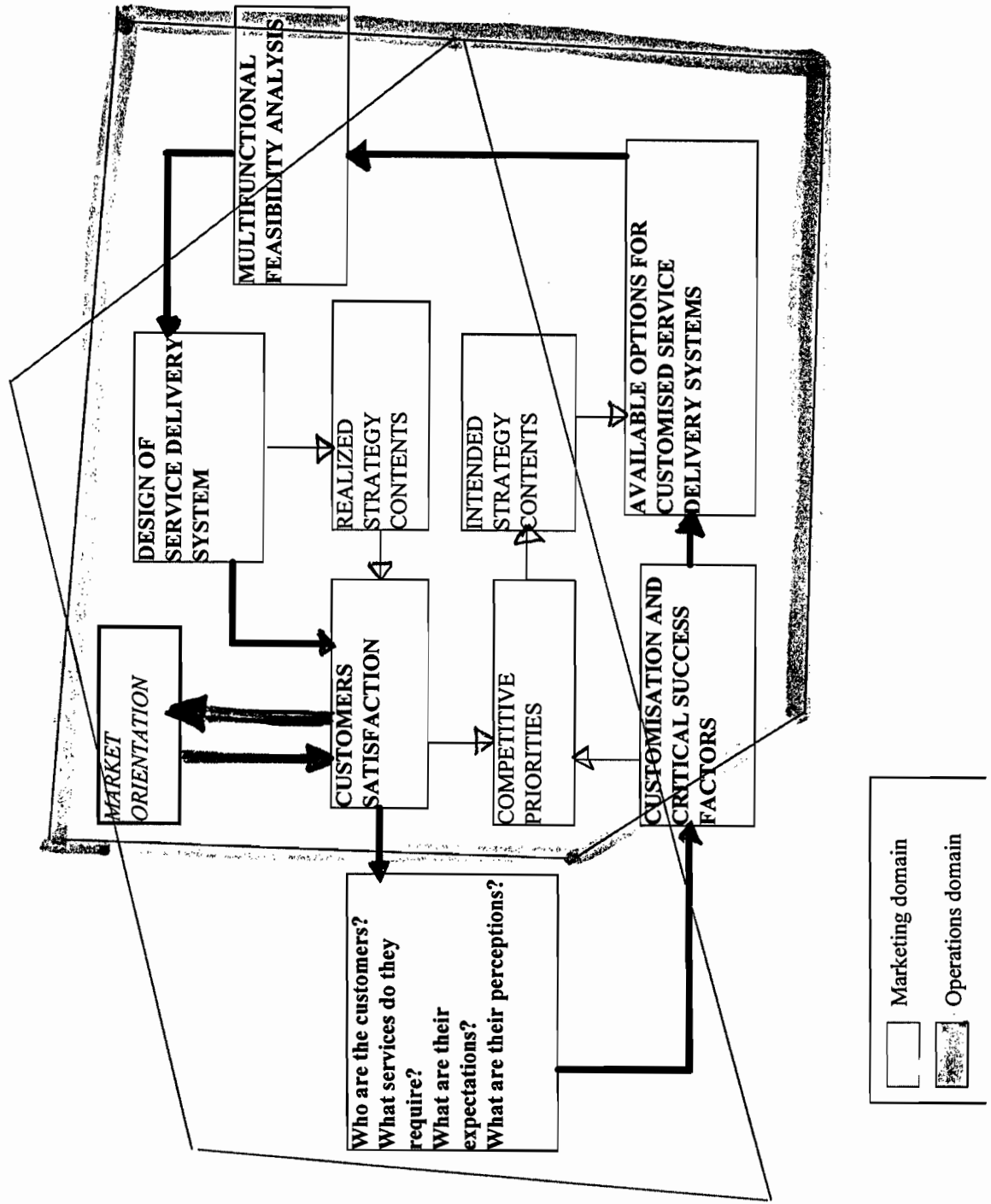
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Figure 1: Marketing and Operations Interactions: their effects on Customisation.







**Figure 4: Service classification according to customer contact and extent of customisation**

		Extent of Customer Contact	
		Low	High
Extent of Customisation	Low	<i>Factory</i>	<i>Mass Service</i>
	High	<i>Job Shop</i>	<i>Professional Service</i>

Source: Maister D. and Lovelock C.H. (1982)

**Figure 5: Classification of services according to degree of labour intensity and the degree of interaction and customisation due to Schmenner**

		Degree of Interaction and Customisation	
		Low	High
Degree of Labour Intensity	Low	<i>Service Factory:</i> ·Airlines ·Trucking ·Hotels ·Resorts and Recreation	<i>Service Shop:</i> ·Hospitals ·Auto Repair ·Other Repair Services
	High	<i>Mass services:</i> ·Retailing ·Wholesaling ·Schools ·Retail aspects of Commercial banking	<i>Professional Services</i> ·Doctors ·Lawyers ·Accountants ·Architects

Source: Schmenner, R. V. (1986, 25)

**Figure 6: Lovelock's service classification**

		Extent to Which Service Characteristics Are Customised	
		High	Low
Extent to Which Customer Contact Personnel Exercise Judgement in Meeting Individual Customer Needs	High	<i>Professional Services</i> <i>Plumber</i> <i>Surgery</i> <i>Education (Tutorials)</i> <i>Taxi Service</i> <i>Gourmet Restaurant</i> <i>Beautician</i>	<i>Education (large classes)</i> <i>Preventive Health Programs</i> <i>College Food Service</i>
	Low	<i>Telephone Service</i> <i>Hotel Services</i> <i>Retail banking (excl. Major loans)</i> <i>Family Restaurant</i>	<i>Public Transportation</i> <i>Routine Appliance Repair</i> <i>Movie Theater</i> <i>Spectator Sports</i> <i>Fast-food Restaurants</i>

Source: C.H. Lovelock (1983, 15)

**Figure 7.1. Classification of services NOC, WOC versus degree of labour intensity**

		Customisation Dimensions	
		NOC	WOC
Degree of Labour Intensity	Low	NOC Service Shop: ·Hospitals ·Auto Repair ·Other Repair Services	WOC Service Shop: · Media · Amusement Parks
	High	NOC Prof. Services ·Doctors ·Lawyers ·Accountants ·Architects	WOC Professional Services: ·Travel Agencies · Congresses, Fairs and Expositions organiser services

Source: Based on Schmenner R. W. (1986, 25)

**Figure 7.2. Service classification: NOC, WOC versus service directed at people and things**

		Customisation Dimensions	
		NOC	WOC
Service directed at	People	Health Care Exercise Clinics Education	Passenger Transportation Beauty Salons Restaurants Broadcasting/Information Services
	Things	Legal Services Accounting Freight Transportation Industrial Equipment Repair	Decorators Pets Haircutting

Source: Based on Lovelock C.H. (1983, 15)

**Figure 8: Customisation Approaches vs. Customisation Dimensions**

<i>Customisation Dimensions</i>	<i>Customisation Approaches</i>	
	<i>Needs-oriented Customisation</i>	<i>Wishes-oriented Customisation</i>
Time (When?)	Anytime customer needs service	When customer "wants" service
Space (Where?)	Any location wherein customer needs service	Where customer "wants" service
Variety (How?)	As the professional decides	As customer "wants" service
Volume (How much?)	As much as professional decides	As much as customer "wants" service

**Figure 9: Customisation Dimensions and Service Industries**

Degree of customisation (1= Very Low, 5= Very High)

<i>Service Industries/ Customisation Dimensions</i>	Airlines	Hospitals	Professional Services	Repair Services	Hotels and Restaurants	Telcomm. and Information Services
Time	At Scheduled Times (3)	When required (5)	When necessary (5)	Queues problems (3)	Scheduled except 24 hours service (4)	On-line (5)
Space	At Airport (1)	Ambulances, Doctors moves to patient location (5)	Office, sometimes at customer location (3)	At Repair service location (2)	At service location except food delivery (1/5)	Portable Computers, Lap Tops (5)
Volume	Limited food and press resources (3)	What patient needs (5)	As professional decides (4)	As professional decides (4)	As much as customer wants (3)	What customer wants (5)
Variety	1st and 2nd class. Short food menu (2)	Doctor decides (5)	As professional decides (4)	As professional decides (4)	Ingredients. Customised rooms (3)	Languages, speed (4)

