

# Mass customization in higher education: the advent of the vanguard method

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## Abstract

This paper presents novel form of service operations design by investigating its impact on the way the higher education system delivers customized services to students on a real-time basis. Using a case study methodology, the paper addresses benefits of applying this design in terms of student experience and administrative efficiency.

**Keywords:** Vanguard Method, Mass Customization, Higher Education

## Introduction

Driven by recent reforms to the higher education sector in the UK, service superiority has become a strategic device through which higher education institutions can gain competitive advantage in terms of student experience and administrative efficiency (Dunnion and O'Donovan 2012). This is due to the belief that it is possible for other higher education institutions, which are equipped with the latest technologies and proper service systems, to deliver student services with almost the same quality. This has resulted in many higher education institutions to adopt alternative ways of offering student services to distinguish themselves from their rivals to achieve competitive success (Cohen and Pine 2007, Clayton 2012). Therefore, several institutions, regardless of their size, have become more innovative through attempting to develop competition strategies based on service mass customization (Clayton 2012). It is as stated by Browne (2010), offering students customized services and choices will drive up quality of education. In this context, mass customized services in higher education institutions is necessary to create student satisfaction and this cannot be achieved unless a departure from a mass production approach is undergone (Pine 1993). This departure will ensure that efficiency of offered services is optimized (Dunnion and O'Donovan 2012). A higher education institution stuck in the mass production approach cannot consider the unpredictable nature of student demand and, thus, cannot provide a real time proper response when unprecedented demand is received (Xia and Wang 2010). Generally speaking, services, regardless of their type, are using

mass production model where employees are controlled through formalized performance monitoring resulting in reduced empowerment (Chen and Hao 2010, Moon et al. 2011). In this environment, the emphasis is on maximizing the volume of services that the employee can handle whilst minimizing the costs (Pine 1993, Tien 2011). This approach is based on standardizing work procedures in which the employees need to handle customer demands in a repetitive manner with detailed descriptions of service procedures, dialogue scripts, and after-contact work standards. However, this standardization of procedures is perceived to increase the mechanization of the student-employee contact and harm student satisfaction in higher education institutions (Dunnion and O'Donovan 2012). However, the transfer from product-oriented economies to a service-oriented ones, witnessed in advanced countries, has fuelled attempts in higher education sector to migrate from the mass production models to mass customization ones (Tien 2011). Different from the push system of the mass production models, the mass customization of services in higher education sector is a pull system where the demand for services is dictated by students (Clayton 2012). However, institutions' ability to develop a service mass customization strategy depends on the choice of a proper service operations design (Silveria et al. 2001, Moon et al. 2011).

This paper discusses findings from a higher education case study that has adopted an innovative systems engineering approach, called "the Vanguard Method", for service operations design and delivery. It is investigated in terms of its ability to provide a real time mass customized services in the admissions and academic registry of one of the UK leading universities. The results of the case study provide evidence that the employment of the Vanguard Method approach for service operations design have a significant impact on the higher education institution' ability to provide a real time mass customized service for students. However, while this approach has so far received little attention in the academic literature, it is getting a significant acceptance in the service sector, where it offers a considerable impact on improving the efficiency and effectiveness of organizations (Jackson et al. 2008). The Vanguard Method is developed by John Seddon (2003). It emerged from the translation of lean manufacturing principles for service departments (Seddon 2008), by also incorporating aspects from intervention theory introduced by Deming (1982) together with some influential dimensions from Soft Systems Methodology (SSM) developed by Peter Checkland (1981).

In the following sections, an account for the service mass customization concept and its significance will be presented. This is followed by an explanation of the Vanguard Method approach for service operations design and delivery. A description of the case study institution and data collected are illustrated. Finally, the results are presented and conclusions discussed.

## **Mass Customization**

The concept of Mass customization was introduced for the first time by Davis (1987). Davis (1987, 1989) studied the limitations of high-volume manufacturing practices of being focused on efficiency, and pointed out that companies should provide more customized products and services to their customers to be more competitive. While the efficiency aspect of the mass production model rely on supply issues, the effectiveness aspect rely on customer demand issues that favors mass customization (Li et al. 2010). Therefore, the definition of mass customization, adopted in this paper, is based on the views of Hart (1994) of meeting the demands of individual customers through the use of flexible processes and organizational structures to produce individually customized services and products at the low cost of mass production system.

Tien (2006) indicated that a service mass customization strategy can be regarded as a success if the customized service can be delivered to customers at a competitive speed (i.e. delivering the customized service on a real-time basis; during the first customer contact). Thus, simultaneous and innovative real time management of the service system through the employment of a proper design for the service operations is the cornerstone for paving the way for services real-time mass customization (Tien 2011). In this context, Tien (2006) defines services real-time mass customization as “meeting the needs of an individualized customer market on a real-time basis”. Modern organizations that work on providing customized products and services to their customers are putting more effort on mass-customized services. However, much of their achievements to date are still around the manufacturing operations and products variation (Moon et al. 2011).

Service departments, such as university admissions and academic registry, are typically exposed to a greater demand variety from customers than are manufacturing departments (Seddon 2003). The Vanguard Method, presented in the next section, recognizes that manufacturing lean tools, which emphasize standardization and the elimination of variation, are not appropriate for higher education institutions, which need to absorb variety in student demand by providing a customized service (Jaaron and Backhouse 2011a). In order for universities, as a service institution, to provide a mass customized service they need to become adaptive organizations, often referred to as ‘organic structures’ introduced by Burns and Stalker (1961). It is recognized that when employees are given the ability to make work decisions, universities are more able to provide a mass customized service (Jackson et al. 2008). The characteristics of this approach are that the tasks are not governed by rigid rules or procedures and the hierarchy of control is not usually present thus allowing service workers to identify the right person to deliver the service when and how the students wants it (Dunnion and O’Donovan 2012).

### **The Vanguard Method**

The Vanguard Method is based on redesigning service operations around customer demand instead of functional hierarchies (Seddon 2008). Customer demand understanding process begins with analyzing customer demands over a period of time to collect information about what customers want and expect and what matters to them most. The need for analyzing customer demands stems from the fact that a comprehensive understanding of the transformation processes in the service system needs to be unequivocally presented before interpretations about the situation are made (Checkland 1981).

Customer demand is analyzed on the basis of two different types usually available in service departments (Seddon 2008). First, value demand- is what the service department has been established to serve and what the customers want which is of value to them. Second, failure demand- is the demand that the service department was not able to serve due to the lack of information or supporting operations. The findings of customer demand analysis phase help to explore all the possible ways through which a better flow of processes can be designed against customer demand. This is followed by redesigning the processes flow charts taking what have been learned considering the customer “wants” and then mapping out the new service system design. The most fruitful way to make full use of the Vanguard Method concept is through the use of a team who is basically from the people facing the problem at work and using the system (Checkland 1981, Jaaron and Backhouse 2011b).

Typically, the new service design is focused on minimizing non-value adding activities from a customer point of view. The new design is used in an experimental environment by using the new model after it has been discussed with the people doing the work. The new processes are induced gradually with careful observation of both employees reaction to it and customer feedback. The processes are tested, re-designed and re-tested again to make sure that customers get the best possible service before going fully live in the service department. However, to design against customer demand is to be more responsive by providing a solution for customer demands at the first time of contact, thus being more productive. Therefore, the Vanguard Method focus is shifted from conventional service measures (i.e. targets and statistics) towards the percentage of one stop service and demand analysis. This is supplemented with the managers' continuous endeavor to further improve service operations to reduce, and ultimately prevent, repeated failure demands. Table 1 presents the major steps for creating a service delivery system following the Vanguard Method.

*Table 1- Stages for the Vanguard Method service delivery design. Adapted from Jackson et al. (2008)*

Stages in process	What is it?	What does it do?
'Check'	An analysis of the what and why of the current system	'Check' asks:  What, in reality, is the purpose of this system? What is the nature of customer demand? How does the work flow? What is value work and what is waste?
'Plan'	Exploration of potential solutions to eliminate waste	'Plan' asks:  What is the purpose of the system from the customer's perspective? What needs to change to improve performance against purpose?
'Do'	Implementation of solutions incrementally and by experiment	'Do' includes:  Develop redesigns with those doing the work, experiment gradually, Continue to review changes, and work with managers on their changing role.

The Vanguard Method integrates the decision-making processes with the work itself (Jackson et al. 2008, Jaaron and Backhouse 2010). This way allows for more control on service processes because data is in the hands of the people doing the work, and provides ability and creativity in responding to the system's surrounding environment (Jackson et al. 2008). However, the success of the Vanguard Method is based on achieving economies from understanding the flow of the work, and not from the scale of production (i.e. quantity of transactions). Measures used are built in so they automatically tell you what is happening. These measures are usually centered on the concept of how good the service is in achieving the purpose and absorbing the demand variety. When demand variety is absorbed service productivity increases. The Vanguard Method absorbs variety by making intelligent use of the empowered employees (Jackson et al. 2008). The result is a self-adapting system (Seddon 2008). Eventually, this way allows for more control on service processes because data is in the hands of the people doing the work (Korkmaz 2012), and provides resilience and creativity in responding to the system's challenging environment (Jackson et al. 2008). This is also reflected in the work of Jaaron and Backhouse (2013) who indicated that such system characteristics is essential for developing a capacity for resilient organization.

## **Research methodology**

In order to empirically explore the Vanguard Method relationship with enhancing the mass customization ability of admission and academic registry services in the higher education sector, a case study was conducted in one of the UK leading universities in the east midlands region of England. The University underwent a Vanguard Method intervention in 2011. The intervention covered the application, registration and enrollment functions of the academic registry services of the university. The intervention was deemed necessary as it was discovered that over 60 percent of students' contacts with the academic registry were classified as failure demand; this is due to the fact that the academic registry was not doing the demands right or not able to process demands right for students due to many system conditions. Therefore, student satisfaction was noticeably low.

The mixed methods design (Tashakkori and Teddlie 1998) is used in this research as the technique for conducting the research process. Three main sources of qualitative data have been employed; these are observations, semi-structured interviews, and university documents (Bryman and Bell 2007). Overall, ten semi-structured interviews were conducted. University documents in addition to researcher observations and notes were used to supplement the data collected through interviews.

## **Data analysis and results**

The analysis process of interviews followed the “thematic analysis” guidelines presented by Bryman and Bell (2007). After analyzing the interviews, they were compared with observations and documents' content to provide a thorough analysis of the phenomenon under investigation. The full process of analysis used coding system of transcripts in order to achieve the analysis themes. Five central themes (i.e. factors) were identified, that have equipped the admission and academic registry of the university studied with capability to provide a real-time mass customized services for their customers. These factors are presented in Table 2 and fully explained below.

### *Theme 1: A variety absorbing Design.*

The interviews analysis has revealed that the ability of the Vanguard Method to deal with student demand variation as the most important element that has helped the admission and academic registry functions to provide a real-time mass customized service. According to interviewees, the Vanguard Method is focused on the flow of the work, and not on the scale of production (i.e. quantity of transactions). It is at the “check” stage where understanding the flow of the work is taking place, and through this understanding new service operations can quickly emerge to deal with unexpected student demands. Therefore, the Vanguard Method is viewed by interviewees as a variety absorbing system where employees have the decision making authority to instantly create new service processes to provide customized services for each student.

### *Theme 2: team work.*

It was evident from interviews analysis that relocating service employees within the academic registry to be part of a team is the corner stone for a successful Vanguard Method intervention. The essence of this team is that all the individuals are working together to perform an entire process and if necessary they can seek the help from each other to accomplish a task. Instead of separating the individuals into different departments, they are all now working within the boundaries of one office to make sure they provide what students exactly want from the first contact. In this environment, the responsibility of the work is shared by the team members. An employee could receive a different student demand every time a student contacts the academic registry. He actually performs a whole student demand or a part of a demand that provides a solution or solves a problem for a student who cares about. This adds richness to the work with a tremendous potential for a real-time customized service delivery.

*Table 2- Factors enabling a real-time mass customized service in higher education*

Factors identified	Enablers
Theme 1: Variety Absorbing Design	<ul style="list-style-type: none"> <li>• Students demand predictability provides clarity of the system.</li> <li>• Quick adaptability of operations.</li> </ul>
Theme 2: Team Work	<ul style="list-style-type: none"> <li>• Relocation of service employees to be in teams.</li> <li>• Responsibility is shared by every team member.</li> </ul>
Theme 3: Empowering employees	<ul style="list-style-type: none"> <li>• Decision making authority is at the employees' level.</li> <li>• Freedom to act on the system.</li> </ul>
Theme 4: Performance measurement	<ul style="list-style-type: none"> <li>• No mere targets are used to measure performance.</li> <li>• The number of value-adding demands handled is the only measure used.</li> </ul>
Theme 5: Managers role	<ul style="list-style-type: none"> <li>• They quit the role of monitors.</li> <li>• They support employees with their experience to deliver a customized service.</li> </ul>

*Theme 3: Empowering Employees:*

The analysis has also revealed that service employees are given full control on what they have in hands; they rely on their innovation and intelligence to make instant decisions regarding student demands and how to serve them the best. Employees can decide what and how to do the work as long as they are within the boundaries of their obligations to the university. The Vanguard Method recruits employees who can steer the work rather than being steered as an essential requirement for service mass customization.

*Theme 4: Performance measurement:*

According to interviewees, the Vanguard Method design measures performance on the basis of how good employees are in matching the university principles of providing what the student wants and how he wants the service. Therefore, the number of value-adding demands is counted

against the non-value adding demands to form the basis for measuring and evaluating employees work in general.

#### *Theme 5: Managers' role:*

The results of analysis also showed that service employees are no more in need for managers to instruct them on how to do things; on the contrary, they need support and advice from their managers to deliver the customized service. The new role of academic registry managers includes becoming a part of the workforce as they had the capability, and on occasions can act on this capability. They substitute for front-line employees where available to help front-line employees serve the students as they want.

### **Discussion and conclusion**

In this research inquiry, an attempt has been made to investigate the ability of the Vanguard Method to enhance mass customization ability of student services in the admissions and academic registry offices in one of the UK leading universities. While it is difficult to generalize findings from one case study, this research inquiry demonstrates an interesting dynamic of the vanguard method that can provide an understanding of how mass customization of student services in higher education administrative offices could be achieved. The paper presents five different factors that are enablers for higher education institutions to provide mass customized services for their students.

The results in this paper suggests that achieving real-time mass customized services for students in the higher education sector is dependent on the integration of two significant aspects that guarantee the mass customization capability of the service system (Duray et al. 2000). These two aspects are, firstly, the integration of university student demands into the design of services. Secondly, is to provide a reasonable speed of delivering the customized service. The Vanguard Method's implementation methodology supports the first aspect due to the fact that student voice and demands are strongly present in the redesign phase of university services in the case study presented in the paper. This is contradictory to other service innovation and redesign projects where the customer voice is often not given enough room, such as the case in the R&D and the service reengineering projects. The Vanguard Method also supports the second aspect mentioned above (i.e. speed of delivering the customized service) as a result of front-line employees' true involvement and empowerment. This has been regarded as a major determinant for a successful implementation of a mass customization service delivery system, and also important for speedy delivery of customized services (Chen and Hao 2010). The results of the case study conducted showed that the involvement and participation of front line employees is very vast to the extent that they are experienced enough to provide a real-time mass customized service, because these employees were the people through which the search for evidence for justifying the new design and practical implementation was made.

However, Burns and Stalker (1961), in their famous study of organizational structures, concluded that organizational attempts to change from a mass production model to an organic one, such as the Vanguard Method, are not without difficulties. The powers inside the organization will fight to maintain control of the functions that are still holding the mechanistic characteristics. Therefore, the Vanguard Method, similar to many redesign initiatives, requires

the availability of a strong leadership at the early stage of the implementation, which is able to persuade people at all levels.

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