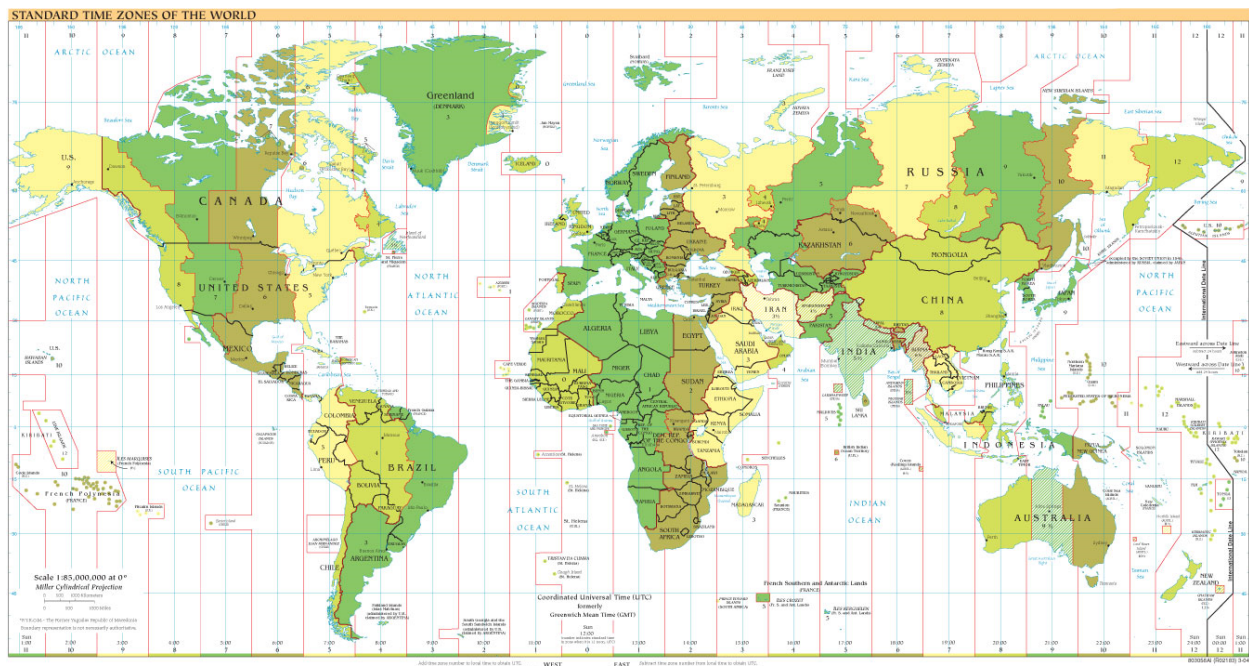# PROCEEDINGS

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We sincerely thank the authors and the reviewers who made this Proceedings possible.

We hope you will join us again at the **IABE-2009 Las Vegas in October 2009 and IABE-2010 in Bucharest, Romania.**

Warmest regards,

Cheick Wagué, Ph.D.
Detelin Elenkov, Ph.D.

June 05, 2009
Thessaloniki, Greece

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A STUDY OF THE CORE-PERIPHERY MODEL OF WORK FLEXIBILITY IN THE IRISH HOSPITALITY INDUSTRY

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ABSTRACT

Various studies of organisational flexibility have looked at the links between numerical and functional flexibility. They have tried to explain how organisations are able to obtain these concurrently. This can lead to competitive advantage. According to Kalleberg (2001), this link is achieved using the core-periphery model. In this paper it is proposed to discuss the merits and shortcomings of the core periphery model and to test this model in the Irish hospitality industry. The author analysed 177 completed responses from employers and 246 completed responses from employees. The results presented here would reflect Kalleberg's thesis that the core-periphery model is not an accurate representation of how firms organise their manpower. Furthermore, the findings here would not support the theory that it is necessary to have a group of temporary workers with low paid, insecure jobs and low commitment in order to protect a core group of employees who are highly committed and who enjoy functionally flexible stable employment. As reflected already, we see that part-time employees have many benefits, some have training and they are involved in teamworking and multiskilling. No relationship was found between numerical and functional flexibility. This is at variance with the thesis of the flexible firm, which claims that numerical and functional flexibility are pursued in a strategic way by firms. The study extends the debate on the flexible firm to include work-life balance as the findings show that numerical and functional flexibility are positively correlated with work-life balance.

Key words: work flexibility, core periphery, part-time

1. INTRODUCTION

Various studies of organisational flexibility have looked at the links between numerical and functional flexibility. They have tried to explain how organisations are able to obtain these concurrently. This can lead to competitive advantage (Tarique and Schuler, 2008). According to Kalleberg (2001), this link is achieved using the core- periphery model. The core is associated with more regular workers having good employment conditions. The periphery consists of those having a more casual employment relationship.

More specifically, according to Kalleberg (2001, p.2) the literature presents two different perspectives on the labour market: (a) "improving workers ability to carry out a variety of jobs and to take part in decision making, and (b) cutting costs by constraining workers' involvement in the establishment". These two strategies have been called by a variety of names e.g. functional versus numerical flexibility (Atkinson, 1984a). In this paper I propose to discuss the merits and shortcomings of the core periphery model and to test this model in the hospitality industry.

2. ATKINSON'S FLEXIBLE FIRM

The core-periphery arguments trace their academic roots to the idea of safeguarding the resources and competences of an establishment. This is perceived to be central to its competitiveness. There is a call for adequate flexibility strategies for both employers and employees (Kerkhofs et al., 2008). Atkinson proposed a model of the flexible firm. In the flexible firm model flexibility is defined as functional, numerical and financial flexibility (Atkinson, 1984b).

Functional flexibility is concerned with the ability of employees to handle different tasks and move between jobs, i.e. multiskilling. This approach enables employers to match changing workloads, production methods and/or technology. Numerical flexibility refers to the power to adjust the number of workers or the number of hours worked, in response to changes in demand. Financial flexibility refers to a firm's capability to change employment costs in response to supply and demand in the external labour market. This facilitates the objectives of functional and numerical flexibility. Furthermore, it involves a move away from standardised pay structures. It is directed towards more individualised systems dependent upon performance.
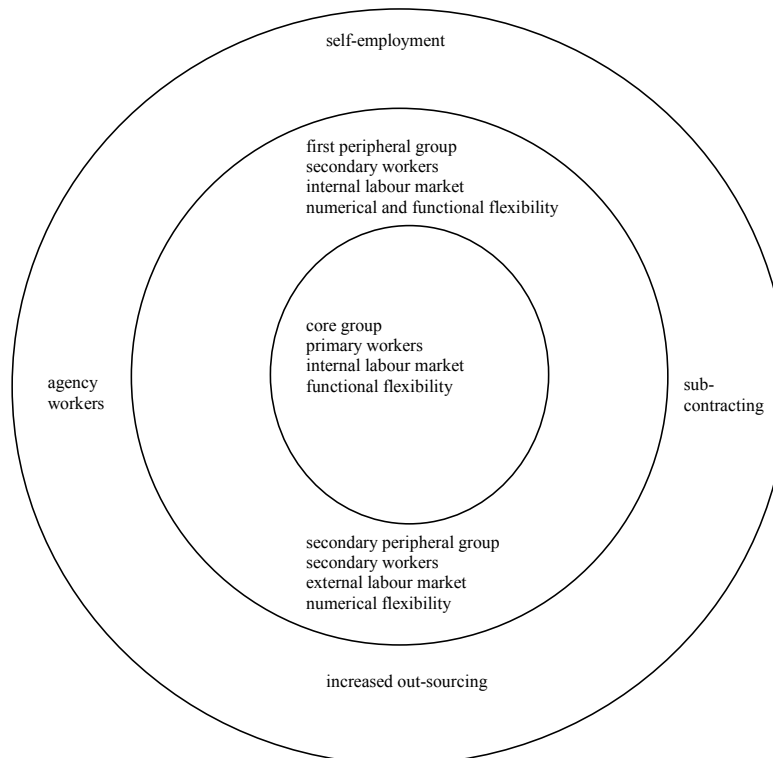
In addition, Atkinson proposes an ideal model of the fully flexible firm (cf. Figure 1, 1984b). Such a firm would employ a numerically fixed core group of employees. The core would consist of full-time employees who carry out the key activities of the firm. Surrounding the core employees are the peripheral groups. The latter insulate the core from the effects of changes in demand. Peripheral group one employees have permanent contracts. However, they have few career opportunities and less job security. Peripheral group two employees are more numerically flexible. They are mainly part-timers, job sharers or employees on short-term contracts. These two peripheral groups are in their turn surrounded by external or distanced groups. They are not directly employed by the company and include sub contractors, self-employed workers, temporary staff agencies and outsourcing. According to Bryson and Blackwell (2006) a rise in numerical flexibility through temporary contracts is unsatisfactory due to inconsistencies and lack of stability for management.

This model offered management and government policy makers a framework for identifying the main practices for development. The aim would be to obtain both functional and numerical flexibility. It suggested that they should seek to establish long-term employment with the core regular permanent workers. These are highly trained, skilled and committed to the organisation. At the same time, they externalise other activities and /or persons by means of transactional contracts. This approach is supposed to achieve cost effectiveness. The numerically flexible, non-standard peripheral workers are used to protect the regular core labour force from changes in demand (Kalleberg, 2001; Johnson, 2004).

2.1 CORE-PERIPHERY MODEL (Figure1)
The flexible firm represents the structure towards which Atkinson believes UK firms are moving.

Figure 1
THE CORE-PERIPHERY MODEL

self-employment

first peripheral group
secondary workers
internal labour market
numerical and functional flexibility

core group
primary workers
internal labour market
functional flexibility

agency
workers

sub-
contracting

secondary peripheral group
secondary workers
external labour market
numerical flexibility

increased out-sourcing

(Adapted from Atkinson, 1984b, p. 29 and Marchington and Wilkinson, 1996, p. 28)

In summary, the author has identified the main features of Atkinson's flexible firm i.e. functional and numerical flexibility. Most commentators still broadly perceive labour utilisation in core-periphery terms. The core contains the more regular workers, with relatively favourable conditions of employment. The periphery group has a more casual employment relationship. The debate raises the following question: Is the core-periphery model a relevant model for today's workplace? The next section will examine in more detail the various stances adopted.

2.2 CRITICISMS OF THE FLEXIBLE FIRM

While the framework of the flexible firm has many merits, criticisms have also been documented. The criticisms of the model focus mainly on three aspects (Legge, 1995, p. 153)

- "Sloppiness in conceptual specification

- Lack of unequivocal empirical support for the model as description

- The covert ideological agenda embodied in the model as prescription".

The concept of core and peripheral workers has been interpreted by managers in different ways. Attempts to equate the core with skilled, flexible workers and the periphery with unskilled, inflexible workers have been criticised as too simplistic. Furthermore, there is the additional complication of dual status. This occurs when a worker may simultaneously be a core and a peripheral worker, depending on the point of reference. The ambiguity inherent in the distinctions between core and peripheral workers can also lead to the apparent contradiction of temporary work lasting longer than permanent work (Pollert, 1988, 1991; Legge, 1995)

Firstly, the model's assumption of homogeneity within the core group and within the peripheral group is not an accurate reflection of reality. It is also difficult to analyse the make-up of the core. Some writers have discussed a variety of work arrangements that comprise the periphery, but have tended to treat the core as a fairly homogenous group. Moreover, there is a counter argument to this. To view core and peripheral workers as occupying positions in separate parts of the organisation is to neglect considering ways in which these groups of workers may work together within the same departments. They may even perform the same jobs within an organisation (Atkinson,1984a,b; Pollert,1991; Kalleberg, 2001).

Secondly, the relationship between the core and periphery sector(s) is more elaborate than is generally assumed by the core-periphery model. It may not always be the case, for example, that workers in the periphery are used to protect the core. In addition, these two groups of employees may be related in other ways, such as recruitment and selection of temporary agency staff for permanent positions (Kalleberg, 2001).

Also, it is questionable whether the flexible firm model shows both the core and periphery labour force as separate employment categories. Some writers have found that in the hospitality industry, part-time and temporary staff are extensively used to provide essential core services. There is some evidence from the British retailing and hospitality industry that part-time, temporary and casual staff make up the core rather than the periphery. They are essential to the organisation. Others have found that the use of temporary workers is more likely to occur where demand is predictable. Also, overtime is the preferred method to achieve temporary flexibility where demand is unpredictable. Thus temporary workers are not replacing standard workers. On the other hand, there is evidence that suggests that employers and many trade unionists regard part-time workers as marginal. Part-time and temporary employees are also treated as distinct labour force segments. Other studies show that temporary work appears to be a screening procedure to recruit permanent staff rather than a strategy to increase a periphery. Furthermore, there is evidence that the chief reason for using self-employed workers is for specialist skills which are unavailable in the core work-force. It is not to provide numerical flexibility (Pollert, 1988; Legge, 1995; Buultjens and Luckie, 1997).

On a more optimistic note, there are now opportunities for skilled, flexible workers to improve core production and to be in a better core position in the work-force. This is in contrast to Braverman's (1974) idea of a general downgrading of the labour process under capitalism. In brief, functional flexibility may not always be used to complement the quality of work. Neither can numerical flexibility be viewed as a low-cost approach. Both methods can be used within the same workplace.

Many authors disagree with Atkinson's idea of the flexible firm. Although there has been a trend towards more flexible working arrangements, there is no clear demonstration of a major change in employment style (Marginson et al., 1988, Morley et al., 1995). In addition, Pollert has questioned the trend towards increased use of peripheral workers. Pollert's arguments are supported by MacInnes (1988) who claims that the flexible firm lacks cohesion. It has not been effective in practice. In contrast, this conclusion by MacInnes (1988) was challenged by Geary (1992). In his study of employment flexibility in American Electronic Plants, it was found that the flexible firm did have a substantial impact on industrial relations. In one of the plants, Astra, seventy per cent of the employees were temporary in keeping with Atkinson's second peripheral group. Geary also found evidence to suggest that peripheral workers were subject to minimised labour costs. In contrast, core workers were treated to benefits, e.g. cafeteria vouchers, to win motivation and commitment (Geary, 1992).

Various studies that have focused on the relationship between functional and numerical flexibility in organisations, have tended to view this interrelationship mainly in terms of a relatively simple core-periphery model (e.g. Atkinson, 1984a,b; Olmsted and Smyth, 1989). The debate here has focused mainly on whether it is an accurate representation of the organisation of manpower by employers. However, it could be argued that this approach ignores different ways in which the two flexible forms of work organisation may be related. Also, employers have created various practices in order to balance the advantages and disadvantages associated with both forms (Kalleberg, 2001). Similarly, another study has found that the core–periphery contrast is not refined enough as a workable model (Hunter et al., 1993). Internal labour markets are changing as a result of subcontracting, contingent work, discretion in employment decisions regarding hiring and firing and increased autonomy in work groups (Cappelli, 1995). He found that these market-mediated arrangements did not correspond to the core-periphery model in Britain. However, these studies have weaknesses where the information about employees comes from employers, with the main focus being on the employer perspective (Hunter et al., 1993; Walsh and Deery, 1999). Furthermore, a study conducted in Ireland on the top trading and non-trading companies has shown that there is a move towards more flexible work practices. However, the evidence does not support the flexible firm thesis (Morley et al., 1995).

Also, Pollert (1991, p. 31) stated that the flexibility debate

> should be abandoned as a framework for research and replaced with a more complex perspective, which relates to the untidy and contradictory dynamics of the real world.

In summary, empirical research consistently concludes that the flexible firm model is insufficient to explain the changes observed in organisations. The theoretical distinction made between core and peripheral workers appears to be unsupported in a majority of cases. However, others argue that the lack of a devised and written strategy in the upper strata of the firm is not conclusive proof that strategic change does not exist. Small changes are occurring in various flexible areas. This adds up to a considerable driving force (Proctor et al., 1994).

3. CONTEXT OF STUDY

The evidence points to a lack of service-based empirical research (Lucas, 1996; Hoque, 2000; Illeris, 2002). Many of the flexibility debates of the 1980s focused on manufacturing and failed to give due importance to the service sector. Furthermore, this approach does not take into account the fact that the hospitality industry developed these working practices during the 1960s and 1970s (Baggauley, 1990).

> The importance of services, and the extent to which that importance has increased, is yet to be reflected within empirical research, despite the fact that it is sections of the services sector that will shed the greatest light on the future employment relationship (Hoque, 2000, p.2).

Further, Van Scotter and Culligan (2003) have pointed to the need for more hospitality research.

In addition, there is a need to research the small establishment as Irish industry is mainly made up of small businesses (Okumus, 2002). Also, the literature highlighted a lack of human resource research in Ireland and insufficient research in the non-unionised sector (Hoque, 2000; Bird et al., 2002).

Ireland has over sixty per cent of the labour force is employed in services and the vast majority of this employment is full-time. Furthermore, part-time employment in the services sector is significantly lower in Ireland, than in either the Netherlands or the UK (Humphreys et al., 2000). In the economy in general, tourism is responsible for the employment of about one in twelve of the non-agricultural workforce and approximately one tenth of those engaged in the service sector (Irish Hotel Federation, 2001).

3.1. DATA SET
The author's view was that a structured direct survey would be most appropriate in order to provide broad coverage of an integrated study of work flexibility. The author decided to conduct a survey of employers and employees throughout Ireland. For the employer survey, a stratified sample design was chosen in relation to star rating and geographical spread. Because hotels provide a broad range of facilities, they are classified from 1* to 5* categories in increasing order of quality and service. All five* hotels were selected and a random sample of one in two of four*, three*, two*, one* and unclassified hotels. All five star hotels were selected which included 23 at the time of the survey. Also, these hotels offer a wide range of facilities. They have the most sophisticated product. The key respondent for the employer survey was the human resource manager and, in his/her absence, the general manager. A total of 470 employers were surveyed. This served to generate a response rate of 40% for employers which included 177 usable questionnaires out of a sample of 442. Qualitative interviews with leading Irish hotel industry spokespersons were used to clarify and confirm aspects of the research setting.

It was decided to survey employees of five, four and three star hotels in a unionised group, a non-unionised group and two family-run hotels, including a four* and a three*. In approximately half of the hotels the human resource manager distributed the questionnaires to employees and in the balance of hotels the author went along in person and distributed the questionnaires at lunch time. This resulted in 246 successfully completed questionnaires out of a sample of 946 which was a 26% response rate.

3.2 QUESTION TYPE
0n the whole, forced choice questions were used. In response to the literature and the pilot survey, a complete range of responses were listed wherever possible (de Vaus, 1993). Likert-style rating scales were used. In addition, semantic differential formats were used in some cases. Ranking formats were also used. The questions on work-life balance issues were taken from a successful survey conducted by the Industrial Statistics Unit, Trinity College Dublin in 2002.

3.3. METHODOLOGICAL PROCEDURE
A pilot test was conducted among HR managers to ensure validity and reliability. For reliability of attitude type questions a reliability analysis-scale alpha was conducted which showed alpha to be .6872; this was significant and demonstrated the ability of the questions to test what they set out to test (cf. Appendix 1). A variety of statistical techniques were used such as frequencies, cross tabulations, correlations and regression analysis.

4. FINDINGS

4.1. LINKAGE BETWEEN NUMERICAL FLEXIBILITY AND FUNCTIONAL FLEXIBILITY
There is no relationship between the extent of numerical and functional flexibility. This relationship can only be investigated for the employer survey. In other words, hotels that operate numerical flexibility do not necessarily engage in functional flexibility practices. The extent of numerical and functional flexibility is correlated with the extent of work-life balance supports (Table 1). Hotels that have a high level of functional and numerical flexibility also provide many work-life balance supports. The respective correlation coefficients are .394 and .310. Employees concur with the employer.

According to the employee survey, the correlation between the extent of functional flexibility and work-life balance support is .256.

TABLE 1
CORRELATION BETWEEN FUNCTIONAL/NUMERICAL FLEXIBILITY AND WORK-LIFE BALANCE ISSUES (EMPLOYER SURVEY)

Correlations

		work life balance supports b3	extent of numerical flexability types qa6	numerical flexability percentage qb1 types of workers plus work arrange	extent of types of functional flexability e1
work life balance supports b3	Pearson Correlation	1	.310**	.057	.394**
	Sig. (2-tailed)	.	.000	.447	.000
	N	177	176	177	177
extent of numerical flexability types qa6	Pearson Correlation	.310**	1	.253**	.085
	Sig. (2-tailed)	.000	.	.001	.261
	N	176	176	176	176
numerical flexability percentage qb1 types of workers plus work arrange	Pearson Correlation	.057	.253**	1	.086
	Sig. (2-tailed)	.447	.001	.	.254
	N	177	176	177	177
extent of types of functional flexability e1	Pearson Correlation	.394**	.085	.086	1
	Sig. (2-tailed)	.000	.261	.254	.
	N	177	176	177	177

. Correlation is significant at the 0.01 level (2-tailed).

4.2. NUMERICAL FLEXIBILITY

According to employers, the vast majority of hotels have permanent part-time employees (Table 2). As regards employees, of those who work full- time, approximately one tenth would prefer to job share. Those who work part-time are happy to continue to do so. This is a significant finding ($p<.05$) which supports the view that it is the fulfillment of one's own personal values, purposes and goals that is driving the worker, as opposed to money, power and job security. The interview with the HR manager highlighted the fact that employees are demanding not just a job to provide them with their primary needs, but also family time and social interests outside the work environment.

TABLE 2
EMPLOYEES' WORKING TIME ARRANGEMENTS(WTA) AND EMPLOYEES' PREFERRED WORKING TIME ARRANGEMENTS (WTA)

	Employees' WTA *(N=246)*	*Employees' preferred WTA (N=245)*
Full-time	77%	67%
Part-time	20 %	21%
Job-share	2 %	11%
Flex-time	1%	1%

Staff are employed on a supply and demand basis. There is evidence in all hotels of part-timers being employed with no fixed number of hours. It was found that part-time work does not lead to a heavy workload. In addition, approximately half of full-time staff regularly work longer than standard hours. In relation to the employees surveyed, approximately half of the full- time employees work longer than standard hours, as compared to a minimal number of part-time employees. This is statistically significant ($p<.05$) and reflects standard practice in the hotel industry regarding the long hours culture. Full-time employees are not usually compensated for this work, whereas part-time employees

are usually paid by the hour. Furthermore, the findings show half of all employees are of the opinion that putting in extra hours helps career prospects.

The most common qualification for full-time staff was a degree, whereas for part–time staff it was Leaving Certificate. More full-time workers are pursuing an educational qualification. Also, one half of employers say that employees take up working time arrangements in order to have more time for education. One third of employees surveyed expressed the same opinion. The vast majority of people have been less than three years in the present employment. The majority of employees surveyed were working in a non-managerial capacity.

 There are seven types of employees working in hotels i.e. permanent employees, temporary employees, permanent part-time workers, fixed-term contracts, casual employees, trainees and contract labour. Table 3 shows the extent of numerical flexibility. Hotels are represented as having a range varying from one category of worker present, to all seven categories of worker employed.

TABLE 3
COMPOSITE FIGURES OF THE EXTENT OF TYPES OF NUMERICAL FLEXIBILITYT (QA6)

Extent of Types of Numerical Flexibility		
	Yes percentage	*Number*
One category of worker	2	N=3
2	17	N=29
3	26	N=46
4	27	*N=48*
5	19	N=34
6	5	N=9
Seven categories of worker	4	N=7
Total	100	N=176

4.3. FUNCTIONAL FLEXIBILITY
The majority of employers are of the opinion that functional flexibility practices lead to greater job satisfaction, improved service quality, opportunity to develop new skills and a more productive workforce (Table 4). Although employees are also positive, they are not emphatic in their views about these work practices. A majority agree that service quality results improve. Half agree that greater job satisfaction and opportunity to develop new skills also result. A majority say these practices do not result in greater decision making.

TABLE 4
EMPLOYEE EFFECTS OF FUNCTIONAL FLEXIBILITY

Employee Effects				
	Yes percentage (employers)	*Number*	*Yes percentage (employees)*	*Number*
More say in decision making	38	N=173	37	N=169
Greater job satisfaction	60	N=176	52	N=169
Improved service quality	68	N=176	63	N=169
Opportunity to develop new skills	69	N=176	50	N=169
More productive workforce	65	N=176		
Greater job security	46	N=176		

There are five types of functional flexibility present in hotels, i.e. teamworking, quality circles, multiskilling, job rotation and problem solving groups. Table 5 shows the range of functionally flexible

work practices in hotels. Figures vary from .00 meaning no functional flexibility, 1 signifying one practice present, up to all five types of functional flexibility.

TABLE 5
COMPOSITE FIGURES OF TYPES OF FUNCTIONAL FLEXIBILITY

Extent of Types of Functional Flexibility e1	*Yes Percentage*	*Number*
.00	10	N=18
One type of functional flexibility	26	N=45
2.00	37	N=66
3.00	20	*N=36*
4.00	3	N= 5
All five types of functional flexibility	4	N=7
Total	100	N=177

A regression analysis was done for functional flexibility and the various independent variables which could impact on it (Table 6). In relation to the independent variable functional flexibility c1a-c1e, job type was significant (p<.05). It was found that managers and supervisors have a higher level of functional flexibility than employees. Regarding the independent variable functional flexibility outcomes decision making, job type was also found to be significant (p<.1) This means that managers and supervisors and those with a high level of functional flexibility (10 per cent level) are more likely to be positive about decision making. In relation to the independent variable improved service quality, type of hotel was found to be significant (p< .05). The family-owned hotels and those with a higher number of stars are more positive about service quality. When we chose the independent variable developing employee skills, star rating was found to be significant (p<.05). Hotels with a higher number of stars are associated with developing employee skills. This is as expected, as these hotels have more resources at their disposal for staff development. No difference was found when we tested with job satisfaction as the independent variable.

Table 6

MULTIPLE REGRESSION OF FUNCTIONAL FLEXIBILITY C1a-C1e (EMPLOYEE PARTICIPATION IN TEAMWORKING, QUALITY CIRCLES, ETC.), FUNCTIONAL FLEXIBILITY OUTCOMES DECISION_MAKING, FUNCTIONAL FLEXIBILITY OUTCOMES SERVICE QUALITY ANF FUNCTIONAL FLEXIBILITY OUTCOMES DEVELOPING SKILLS

Employee and Organisational Characteristics	Dependent Variables Standardised Beta			
	Func.Flex C1a-C1e	Func.Flex Outcomes Decision Making	Func.Flex Outcomes Service Quality	Func.Flex.Outcomes Developing Skills
Number of Stars	-.009	.098	.175	.261*
Type of Hotel	.102	.113	.297*	.174
Age	-.109	-.138	-.081	-.100
Gender	.002	.062	-.044	.042
Highest Educational Qualification	-.019	-.040	.040	-.051
Pursuing an Educational Qualification	.006	-.091	.079	.020
Trade Union in Organisation	-.013	-.072	.030	.038
Job Description	-.201*	-.150**	.054	-.010
Func. Flex. C1a-C1e		.153	.060	.035
R	.224	.295	.276	.239
R Square	.050	.087	.076	.057

*p<.05   ** p<.1

There is no difference between full-time workers and part-time workers for teamworking, multiskilling, problem solving groups, quality circles and job rotation
Part-time work results in the following benefits: improved employee productivity, greater employee satisfaction, less absenteeism/sick leave, less labour turnover, improves business results, helps retain key employees, improves service quality and increases cost savings.

In a minority of cases, employees working part-time are paid less than employees working full-time in comparable jobs. In addition, there are cost savings with respect to fewer employee fringe benefits. An employee working part-time usually gets an appropriate full-time job very quickly. This was found to be more a feature of family-run hotels and independent groups. Part-time workers are eligible for full-time work in all hotel types. In non-unionised hotels, there was a greater tendency to recruit part-time staff from the external labour market, as part-timers.

 Furthermore, the vast majority of all hotel employers were of the opinion that there was no difference between part-time work outcomes and full-time work outcomes. This could be due to the fact, that in the hospitality industry, both part-time and full-time employees work side by side, usually in a team. On the other hand, the interview with the HR manager highlighted the fact that in his hotel having part-time staff created an imbalance in the work environment. They were not perceived to be as serious as full-time staff and based on this experience the hotel in question now has no part-time staff.

The literature shows that part-time work has clear benefits for management in helping them to adjust to circumstances and control costs, while still meeting their targets. Approximately half of those surveyed are of the opinion that part-time work leads to lack of job security. A minority think that it leads to lack of promotion prospects.
Over half of employers are of the opinion that part-time work improves service quality.

In relation to training, according to employers, an employee working part-time who engages in training during non-work hours would get time off in some cases and would be paid for working extra hours in a majority of cases. This was found to be a feature of companies and international chains and four and five star organisations. With respect to employees surveyed, the majority replied that they are compensated for training. There is no difference between full-time, part-time and job-share in relation to compensation for training. As expected, full-time employees spend more time training. The majority of full-time and part-time employees are compensated for training. There is considerable divergence between employers' views on training and those of the employees. Employers' figures for training available and compensation are higher than employees' experiences.

Contrary to some findings in the literature which found that part-time jobs are dead end and insecure, the findings here show that, in a large proportion of cases, an employee, working part-time, usually gets an appropriate full-time job very quickly. The majority of employers reflected the viewpoint that there is no difference between full-time and part-time employees in terms of productivity, motivation, absenteeism, turnover and work organisation.

It was found to be statistically significant that the majority of full-time and part-time employees are happy with their present working arrangements. In summary, part-time workers tend to be of both genders, younger age group, work as an employee, less likely to work more than standard hours, more likely to pursue an educational qualification, more likely to work in the banqueting department, and less likely to work in front office (Farrell, 2006, Appendix B, Tables B13-B19).

5. DISCUSSION

5.1 CORE-PERIPHERY MODEL OF WORK FLEXIBILITY
There is no relationship between the extent of numerical and functional flexibility.   In other words, hotels that operate numerical flexibility do not necessarily engage in functional flexibility practices. This is at variance with the thesis of the flexible firm, which claims that numerical and functional flexibility are pursued in a strategic way by firms (Atkinson, 1984a,b).

The results presented here would reflect Kalleberg's thesis that the core-periphery model is not an accurate representation of how firms organise their manpower. Furthermore, the findings here would not support the theory that it is necessary to have a group of temporary workers with low paid,

insecure jobs and low commitment in order to protect a core group of employees who are highly committed and who enjoy functionally flexible stable employment. As reflected already, we see that part-time employees have many benefits, some have training and they are involved in teamworking and multiskilling. According to O' Connell et al. (2004) approximately one fifth of establishments had implemented new work practices such as teamworking /multi-tasking/quality circles.

According to employers, the vast majority of hotels have permanent part-time employees (Table 2) and this reflects change in recent years in government legislation which confers increased employment rights on part-time employees, which are comparable to full-time employees. This is in keeping with the findings of CERT (2001) who found that 90 per cent of employees in the hotel industry are employed on a permanent basis. Approximately half of those surveyed are of the opinion that part-time work leads to lack of job security. A minority think that it leads to lack of promotion prospects. There are literature references to one particular perspective on flexibility which attributes the spread and development of flexibility to the economic requirements of employers. At its most extreme, it is a manner of degrading and cheapening the work and security of the employees involved (Braverman, 1974). Furthermore, certain studies which reflect the perspective of the employer found that cost savings for flexible workers can only be achieved if they are effectively managed. Cost considerations for employers include training, productivity issues, legal liability, workplace safety and managerial problems. It was found to be statistically significant that the majority of full-time and part-time employees are happy with their present working arrangements. This shows that part-time work is an optimum choice for some employees. As the findings have shown earlier, this may be connected to work-life balance priorities (Aybars, 2007). This discounts the notion of part-time work being a poor option. Part-time workers have enhanced status as the findings show, and part-time working is the preferential option for some people. The vast majority of people have been less than three years in the present employment. This reflects that fact that many employees perceive working in the hospitality industry as a path to another career. Staff are employed on a supply and demand basis. There is evidence in all hotels of some part-timers being employed with no fixed number of hours. This finding reflects research conducted by the National Association of Citizens Advice Bureau - NACAB (1997), who found that flexibility can lead to work procedures that are irresponsible.

As the evidence shows, there are some employees who have secure employment but may not form part of the core. Also, there are peripheral employees working in key areas of the hospitality industry. The flexible firm model shows both the core and the periphery as separate employment categories. However, there is evidence that part-time, temporary and casual staff are part of the core rather than the periphery. Also, they are essential to the organisation. My findings support this latter perspective. The evidence would also support Legge's theory that the rise in numerical flexibility is not necessarily part of a deliberate strategy but rather an opportunistic decision. The evidence here shows that full-time employees work longer hours. This shows the establishment's ability to get numerical flexibility from core workers. Part-time employees only occasionally work longer hours. Furthermore, the evidence presented here shows that both full-time and part-time employees are involved in functional flexibility. In the hotel sector, these groups of workers may work together within the same departments. Also, they may even perform the same jobs within an organisation.

As regards recruiting full-time staff, less than half of all managers found it reasonably difficult. A further one third found it relatively easy. The recruitment of part-time staff from full-time staff, asking on their own initiative to go part-time, was cited as important. Likewise, there is some evidence of recruitment of part-time staff from full-time staff who are asked by the management to go part-time. In addition, regarding part-timers, there is evidence that full-time staff are being recruited as part-timers after a break in employment. In a majority of cases, direct recruitment of part-timers from the labour market is considered the least effective means of recruiting part-time staff. In this sense, the periphery employees protect the core in some respects.

Over half of employers are of the opinion that part-time work improves service quality. Service quality is central to the effectiveness of the hospitality experience (Irish Tourism Industry Confederation, 2002). It was found that functional flexibility leads to more service quality. There is some evidence of a positive link between flexible work and job quality even though there are costs involved here too (Kelliher and Anderson, 2008). Lasierra (2007) found a positive correlation between functional flexibility and competitive strategy using quality.

One could argue that the workforce is becoming increasingly polarised into those who undertake core (permanent, full-time) employment and those employed to take on peripheral (short-term contract and casual) employment. There are mixed signals about the extent of flexible work practices. The evidence presented here points to the spread of flexible work practices but there is little evidence of a move towards the flexible firm. There are small changes occurring in various areas of flexibility. Employers are seeing it as a source of competitive advantage. The research here shows that part-time work results in a more competitive edge for the hotel, increased productivity and better business results. Employees are benefitting from flexible work arrangements for life style considerations. In summary, the core-periphery model is not an accurate representation of the organisation of manpower in the hospitality industry in Ireland.

1. The "leaving certificate" is the final examination in second level and the principal entry requirement for college.

6. CONCLUSION

Work flexibility is a complex issue with many ramifications. The existence of the core-periphery model is not supported in the Irish hospitality industry. There is evidence that flexibility is a strategy which works in hotels. Matching staffing levels to peaks in demand may indicate a more strategic approach to this question. Others argue that it may be a pragmatic approach to labour market fluctuations. On the other hand, employees are happy to choose flexible work arrangements for life style reasons which clearly benefits them.

APPENDIX 1

Table 1

RELIABILITY ANALYSIS OF QUESTIONNAIRE

Reliability
 ****** Method 1 (space saver) will be used for this analysis ******

  R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
D2A	9.7128	9.9919	.3705	.6674
D2C	9.8617	9.4888	.5038	.6118
D2D	10.0532	9.8795	.5087	.6148
D2F	9.8883	8.7629	.5138	.6033
D2G	9.5691	9.7225	.3426	.6848

Reliability Coefficients Work- life balance scale (employee questionnaire)

N of Cases =   188.0   N of Items = 5
Alpha =   .6872

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EXPERIENCING METAVERSE RETAILING: A GLIMPSE OF THE FUTURE?

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ABSTRACT

This paper discusses how metaverses (online virtual worlds) are creating a new space for consumers within which they can interact with retailers and other consumers, transforming the retail experience from being a passive and less-spectator based process to an active and participatory-based one. A case study is presented in order to provide the context for the discussion and also to illustrate in action how virtual worlds could become the stage on which these experiences can be set up and lived, bridging the gap between the real offline space and the electronic web-based space.

Keywords: retailing, metaverses, retail theatre, Second Life, electronic business

1. INTRODUCTION

In this paper we explore how metaverses, i.e. online virtual worlds, and more specifically metaverse retailing, i.e. retailing that takes place in metaverses, can be used to enhance an Internet customer's retail experience. Our discussion takes place in the context of the retail theatre concept proposed by Harris *et al* (2001). We also offer empirical evidence in the form of a case study, that of I Want One Of Those (IWOOT), a UK-based retailer, that has a retail presence both on the web and in Second Life, and a supporting supply chain to deliver to the real world when orders are placed.

2. LITERATURE REVIEW

The Internet and related technologies have affected our business and social environment, enabling the development of an electronic space, which intertwines with the space and place of our physical world (Li *et al*, 2001). The intertwined 'two spaces' have marked the advent of a new period in economic and social activities that were manifested through the development of e-business and related activities since the mid-1990s, affecting the way we live, work, communicate, learn and play (Li, 2007). A further technological development, that of metaverses, extended the electronic space, creating in the process a plethora of new environments within which economic and social activities could take place. Metaverses and the activities within them are not isolated from the rest of the electronic space or the real world itself: "the emergence of these practical virtual reality spaces will have significant consequences primarily because events inside and outside them cannot be isolated from one another" (Castronova, 2005).

Different types of metaverses will support and encourage different types of applications, depending on the underlying theme. In this paper we use the experience of Second Life (http://www.secondlife.com), which is a continuous and persistent world that was designed to provide users with control over nearly all aspects of their world, in order to stimulate users' creativity and self-expression, translating into a vibrant and dynamic world full of interesting content (Ondrejka, 2004). Users can exercise their control by creating any objects they want, for which they own the copyright. This allows trading them for the Second Life currency, the Linden Dollar, which can be exchanged for real currency, allowing them to benefit not only within Second Life, but also in the real world. Initially, first-mover advantage led many well-known brands to establish a presence in Second Life, mainly to capitalise on the associated hype of being the first in their market to make such a move. However, it soon became apparent that unless the environment's characteristics were taken into consideration, such moves would not result in any tangible business benefits (Rose, 2007). Nevertheless, metaverse marketing paved the way for a new phase in marketing and retailing.

Kotler and Armstrong (2007) argue that consumers have been traditionally looking for products that could fulfil their needs. Retailers responded to demand by initially offering the right product for the right consumer, which was then gradually developed to a customer-oriented strategy. Electronic retailers were particularly successful when it came to developing customer relationship management tools using the web extensively and by targeting specific customers via the use of emails (see for example, Feinberg and Kadam (2002)). Nowadays, we are going through the next step of this gradual

transformation, with consumers seeking not only to consume a product or service, but to interact and experience it (see for example, Eroglu *et al* (2001)).

The challenge for retailers is that the atmospherics that play a critical role in the consumers' experiences in real life are difficult to be translated into electronic environments (Dennis *et al*, 2004) and especially on the web; a flat environment. Metaverse retailing, i.e. retailing that takes place in metaverses, such as Second Life, could provide the stage on which these experiences can be set up and lived, bridging the gap between the real space and the electronic space, at least as we have got to know it so far.

Metaverses could be an implementation of what in the retail literature has been described as 'retail theatre' (Harris *et al*, 2001), with retailers providing a service that is different and special and consumers enjoying an increased opportunity to interact and participate in the overall experience. Wells *et al* (1999) note that organisations are more successful if they focus on getting and maintaining a share of each customer, instead of aiming for the whole market, and argue that information technology has become the key enabling factor. Hence, firms are employing information technology to support and improve their marketing offerings. For example, information technology can support and improve customer service strategies by personalising or augmenting service and even transforming products (Ives and Mason, 1990). Wells *et al* (1999) also point out that these strategies should offer customers an effective interactive interface and these interfaces should be built on other information technology elements of customer interaction. If this does not happen, the firm will not be capable of interacting satisfactorily with customers and of increasing the overall customer value. The above are applicable to Second Life, where a range of firms have established a presence, in order to interact with their customers and their avatars, i.e. the characters who act as the users' proxies in the virtual world. In fact, many retailers have even started using metaverses and mechanisms within them to offer their products or services and by doing so to maximise customer value. However, this value sought by customers may vary in Second Life retailing compared to traditional and electronic retailing. In traditional retailing, customers are looking in general, for convenience, customer service, product availability, social interaction and atmosphere, competitive prices and product choice (McGoldrick, 2002), while in electronic retailing consumers are looking for excellent prices as they have the ability to run online price checks, a plethora of product choice, satisfactory product / service delivery at the consumer's home and user friendliness / ease of website navigation (Kim, 2002). For example, when it comes to grocery shopping and consumers selecting a transacting space, they face the dilemma of selecting the atmospherics and interaction of the real space over the convenience of the electronic space and vice versa. Metaverse retailing has the capacity to put back the context and enrich the environment, while at the same time maintaining the convenience factor.

More importantly, the avatar plays a critical role in the formation of the final product or service offering as he / she has the ability to select and choose different elements of the final product. For example, an auto-retailer could provide customers with a paint tool to spray a car with favourite colours before ordering it. Although such extreme customisation may not yet be possible or at least economically viable when it comes to mainstream retailing, it still illustrates how the customer could be potentially encouraged to actively engage and not just be a passive receptor of the outcomes of his choices. In fact, when it comes to transacting virtual items, such as houses, furniture or clothes, retailers in Second Life can allow customers to modify the objects as they see fit in order to match their exact requirements. The digital nature of products is ideal for such modifications, although the customer must possess the skill-set required to perform the modifications. With the avatar creating a product or service that matches his / her needs, we are witnessing another case of a 'transient employee'. This concept was initially proposed by Namasivayam (2003) aiming to illustrate the evolving role of the contemporary consumer, who is, nowadays, focusing on developing products or services that will satisfy his / her personal requirements. A further point is that, the more a customer is engaged in the retail offering, the more likely it is that the customer will consider the whole process as an experience; painting a car is a much richer experience than just clicking on a colour selection. An example of this can be seen at Reebok's Second Life island, where "avatars can live and experience the whole co-design process, using their virtual trainers to extend and express themselves just as in the real world, and experimenting with possibilities they might not have considered" (Rivers Run Red, 2007). The customer first purchases a box for L$50, which contains a pair of DJII shoes that are ready to be customised. These come in 3 sizes to choose among. Once the avatar puts them on, the shoes can be customised by standing in front of a booth that provides the interface to colour each of the 12 shoe sections using the 17 available colours. When the customer is satisfied with the design, this can be transferred to the shoes for L$5. In the context of this example, the actual product is not the

customised shoes, but the experience the customer gains by customising and then enjoying the shoes.

In terms of the unique experience offered by retailers to consumers in Second Life, we suggest the analogy of 'retail theatre' as proposed by Harris *et al* (2001) and Baron *et al* (2001) aiming to shed further light on metaverse retailing. It is a metaphor transferred from the theatre setting to the traditional retail setting to illustrate the: "creation of exciting retail theatre environments that invariably involve opportunities for audience participation and interaction, characteristic of theatrical performances" (Baron *et al*, 2001). As avatars effectively share the metaverse space, they can also share the experiences among them. In the aforementioned examples, while an avatar is going through the selection or modification process, other avatars can observe and comment or even actively engage in the process themselves. This is something not easily possible in other electronic spaces, e.g. the web, where the retail experience is confined to within a few inches in front of the computer monitor. The real world may potentially allow for experiences to be shared locally, but this will still be limited, not only spatially, but also socially, especially now, in the era of social networking, with personal networks often spanning over continents. For example, one of the most popular retail sectors in Second Life is fashion, which has proven so popular and successful that many designs have actually made it to real life (Trollop, 2007). A bride in real life could invite all her friends from around the world to come into the metaverse, while she tries on many different wedding dresses, sharing her joy with them.

Baron *et al* (2001) note that the retail theatre concept has been used extensively by retail firms selling a plethora of product categories and is "generally presented as a fun experience involving spectacle and excitement" (ibid, p.103). There are different motivations, though, for retailers. They argue that some retailers aim for consumers to interact with their products, in order to create a range of responses that will result in product sales. Other retailers aim for consumers to develop a 'sense of belonging'. It is our view that Second Life retailers aim to develop both, i.e. to capitalise on the strong social network already developed in a metaverse and to enhance product sales and customer loyalty, by offering fun experiences. By doing so, retailers offer a 'total customer experience' to customers and examine product consumption as a holistic experience (Harris *et al*, 2003) that is influenced by the social interactions with other consumers, as was also suggested for another retail setting by Aubert-Gamet and Cova (1999). These social interactions should not be ignored and can make a strong contribution to an organisation. As Davies *et al* (1999) pointed out: "consumers appear to add value to the service experience of other consumers through oral contributions (for example offering honest opinions, independent product knowledge, and reassurance about purchase decisions) that contact personnel cannot provide".

Overall, in metaverses, the retail theatre concept is creating a new space for consumers within which they can interact with the other avatars, and potentially transform the retail offering from being a passive (as with web-based retailing) and less-spectator based process to an active and participatory-based experience. At the same time, the consumer is entertained via getting a unique experience. We suggest that this experience is the actual product that the consumer is getting in Second Life, drawing similar conclusions to Sherry *et al* (2001), who analysed another form of a retail theatre.

3. METHODOLOGY

Our empirical research aimed primarily to identify and explore the retail theatre phenomenon in Second Life. More specifically, it had the following objectives:

> 1. To explore whether and how the retail theatre concept is applied to metaverse retailing.
> 2. To observe successful practices, techniques and processes that retailers in Second Life employ in order to offer a unique experience to their customers through their virtual representations, i.e. their avatars.

These objectives were examined via the use of a qualitative case study methodology, which according to Patton (1990), allows for in-depth studies that produce a wealth of detailed information, albeit at the expense of generaliseability. The qualitative case study methodology does not seek to illustrate statistical significance or patterns (see (Patton, 1990; Denzin and Lincoln, 1994; Stake, 1995)). It aims to facilitate the in-depth exploration of cases and to provide rich knowledge of a specific context (Eisenhardt, 1989). The case selected deals with an online retailer that sells tangible products in both Second Life and the web, offering a prime example of how web-based retail spaces

can provide the platform for virtual spaces and how the two can be integrated into one supply chain that eventually reaches the real world. Findings stemming from the case were considered and analysed in relation to the aforementioned research objectives (see Yin, 1984).

4. THE CASE OF I WANT ONE OF THOSE

I Want One Of Those (IWOOT) (http://www.iwantoneofthose.com) is a UK-based online retailer offering a selection of gadgets, toys and home, office, outdoor and travel accessories. IWOOT was one of first companies to allow users to purchase products in Second Life and get them delivered in real life. The IWOOT island features five buildings, which when looked at from high enough spell out the word IWOOT. The one corresponding to the letter W is the retail area.

4.1 The shopping process

Customers first grab a shopping trolley, which is used to carry the customer's selected items. As is often the case with real life shopping trolleys, the trolley can be used to carry another avatar, transforming shopping to a shared enjoyable experience. The customer can browse the items available and add them to the cart, by clicking on them. The first time this happens IWOOT asks customers to register their contact details as these are required for the delivery. Once the customer is ready to check out a summary of the order is presented to the customer and the total cost in Linden Dollars is also calculated. The customer pays the amount of money requested and the transaction is then complete.

4.2 Supply chain and customer relationship management challenges

The company's supply chain needs to be synchronised and integrated in order to deal successfully with both the online and metaverse aspects of product selling and the resultant financial payments and flows. Adding a new customer interface to the supply chain infrastructure in order to extend the retail activities into Second Life can be a significant task and overhead. However, once the retail space is in place the retailer can capitalise on the already deployed supply chains. This is not, though, the case with customer support. On the web customers are used to not being offered live support and their enquiries are answered asynchronously (Sterne, 2000). In Second Life, though, where interaction is critical and with the retail spaces resembling those in the real world, not meeting shop assistants to greet and help the customer can be detrimental to the customer's experience. Automated avatars (bots) assuming the roles of shopping assistants could potentially be used to record customer enquiries, but could not be used as a substitute for a real human being.

When it comes to supply issues it should also be pointed out that IWOOT is making a small number of products available through its points of sale, which are represented by photographs and short descriptions for each product. Hence, the customer can not see a three dimensional representation of the product, neither can the customer experience it. For example, instead of just displaying a radio-controlled helicopter using a photograph, IWOOT could offer a working model to the customers and let them play with it for a few minutes. Both of these approaches would have required significant investment, which might explain why the experience falls short. The complexities of such an undertaking become even clearer when one considers retailers who stock thousands of products. For example, a grocery retailer such as Tesco would have been required to recreate many thousands of products (Fernie and Sparks, 2004). This is not actually possible at the moment as a Second Life island will only support up to a few thousand primitive objects, which at best could only translate to a few thousands products. Another limitation of the technology is the number of simultaneous visitors, as an island will only accept about 250 visitors at a time mainly due to the hardware requirements and bandwidth needed to sustain these connections. Of course, technology will improve and will eventually be mature enough to allow deployment of such demanding retailing applications.

4.3 The customer experience

In addition to the above, IWOOT has created a metaverse retail space which is in alignment with the image they want to convey to their customers, an image that is also consistent with the very nature of their products, which are supposed to be fun and entertaining. This is illustrated in the other activities available on the IWOOT island or the fact that a user can carry an avatar in their shopping cart. In such a case the experience is not only shared by those directly involved, but also those close by. Many metaverse customers may feel they are free to have fun with the trolleys, while others may be more tolerant than they would normally be in real life, because this is a virtual environment. However,

for others, this may not constitute appropriate behaviour and could discourage them from visiting that retail space again. This is further complicated by the role playing nature of the environment. For example, a user may decide to role play a gangster and try to disrupt the retail space in any way possible. Access rights could potentially prevent them from doing so, but as the cost associated with such actions is minimal one can continue under a different identity, giving consumer behaviour a whole new meaning.

Finally, consumer ethics may also be affected. It may be the case that on the web it is more difficult to share a shopping experience, but this indirectly protects the privacy of the customer, who can only interact with the retailers. Hence, if, for example, one was to order a product that was considered 'taboo', no one, but the retailer, would know. This is not the case in real life, where one has to physically enter a space and can be seen by others. Similarly, metaverses may pose such privacy challenges. Although in principle avatars protect the identity of the user, the avatars themselves have established relationships and a role to play in the metaverse that they may not want to jeopardise. As a result, the user may not want to visit such a retail space, using that particular identity.

5. DISCUSSION

The case study presented in the previous section met our first research objective by providing evidence of how metaverses are already used for retail purposes and how elements of the retail theatre concept can be employed. Our evidence also highlighted key practices and techniques used in order to enhance the customer's unique experience in metaverses, effectively meeting the second objective.

Specifically, the customer interacts with the retailer, the retailing area, the objects in it and the application itself through an appropriate dedicated head-up display (HUD) (in our case the shopping cart), which follows the nature of the products or services on offer. The process itself imitates the process followed in real life, although there was no real time interaction with customer representatives, despite the virtual world lending itself to this. This may not be a big difference compared to web-based retailing, but it is a major deviation from what customers are used to in real-world retailing. As in this case the organisation involved is attempting to reproduce real-world experiences, this is clearly an area that requires attention. In addition, our selected case demonstrated a certain level of integration with real world supply chains and service offerings. For example, IWOOT does deliver to real world addresses, but offers only a limited number of products in Second Life.

There was also good evidence of the application of the retail theatre concept in metaverses. For example, the shopping process in IWOOT is a potentially shared enjoyable experience; hence, the avatars are following an active, participatory-based approach. Still, for the retail theatre concept to be applied in full, retailers will need to go to greater lengths to provide richer experiences. This is not to say that significant steps have not been taken; it just highlights the fact that there is scope to engage more with the customer. For example, IWOOT could allow customers to test the gadgets before placing an order. Further challenges are faced in terms of synchronising and integrating the supply chains which exist simultaneously in different retail spaces, the limited number of visitors that a metaverse can accommodate and possible misbehaviour by the avatars in that environment as the IWOOT case has shown.

Finally, although the case presented in this paper is good example of how metaverse retailing can cross to the real world, this is not a prerequisite. In fact, the vast majority of retailers operating in virtual worlds are metaverse-only retailers, typically a sole entrepreneur selling virtual objects like furniture or apparel. Their practices can become 'innovations' for real world organisations that enter metaverses, as they have a good understanding of the environment. A good example of this can be seen in metaverse retailers paying other users a small fee to role play their members of staff, not only attracting more visitors to their retail area by making it a popular destination (because of the staff spending time in that area), but also enhancing the experience customers get. After all, who wants to shop in an empty store?

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IMPACT OF NON-TRADITIONAL ACTIVITIES ON THE EFFICIENCY OF TUNISIAN BANKS: THE STOCHASTIC FRONTIER APPROACH

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ABSTRACT:

Financial reforms introduced in Tunisia for more than two decades have increased the traditional activity of banks in collecting deposits and granting loans. However, following the intensification of competition in the credit market, the income from such activity is following for several years a trend toward decline. Accordingly, banks that are exposed to the loss of substance, they are directed towards non-traditional activities more profitable and practiced on financial market. These activities are generating significant revenue; the non-interest income.

Favored by the attenuation of regulatory constraints, the non-traditional activities in Tunisia (equity participations, asset management, off-balance sheet activities, etc.) are in continuous progress and their income continues to give a significant improvement in Net Banking Income. Like the previous studies on the banks of developed countries (Clark and Siems (2002), Rime and Stiroh (2003), Allen and Liu (2005) and Pasiouras (2008)) and developing countries (Lozano-Vivas and Pasiouras (2008)), the new orientation of the Tunisian banks to non-traditional activities is not without impact on their level of efficiency.

This paper will examine the impact of banking non-traditional activities on the cost efficiency of Tunisian commercial banks. Using a panel data set throughout the post-liberalization period (1986-2005), the estimation of the stochastic frontier of translog cost function provides the following results: The lending activity is not a determinant of the efficiency of Tunisian banks due partly to the accumulation of bad loans in the assets of those banks and on the other hand, the size of banks that implies a stagnation of economies of scale. The non-traditional banking activities showed a positive and significant effect on bank efficiency, but this impact is different depending on capital structure; improved efficiency is most evident in private banks, these activities seem however to be a factor of fragility in public banks.

Keywords: non-traditional activities, intermediation activities, stochastic frontier, efficiency cost, asset-equivalent measure of non-traditional activities (AEM), off-balance-sheet activities, economies of scale, moral hazard.

1. INTRODUCTION

The performance of Tunisian banks was affected by the financial reforms initiated since 1986. Indeed, the various measures of financial liberalization (for example, the suppression of credit rationing and partial liberalization of interest rates) has intensified competition between banks, a situation which led to the increase the traditional activity of banks (in the collection of deposits and loans), which resulted in a change in the structure of banking costs and increasing the size of banks. This change has allowed for Tunisian banks a better exploitation of economies of scale and improving their efficiency (Chaffai, 1998; Chaffai and Dietsch, 2000; Ben Naceur and Goaied, 2001; Bouchaddak and Salah, 2005, etc).

However, over time, the competition generated by the movement of financial liberalization has led to the reduction of interest margins (income of traditional intermediation) and consequently incited banks to move into non-traditional activities focus on the financial market.

On the Tunisian banking market, the income of non-traditional activities (fees + gains on securities portfolios) continues to grow and provide a significant improvement to the Net banking income. Indeed, the graph below shows that the share of financial revenue (interest margin) in the Net banking Income decreased from 78.7 % in 1986 to 56.2 % in 2005, while the share of non-financial revenue (non-interest income) grows from 21.3 % to 43.8 % during the same period.

GRAPH 1: COMPONENTS OF THE NET BANKING INCOME OF TUNISIAN COMMERCIAL BANKS (%)
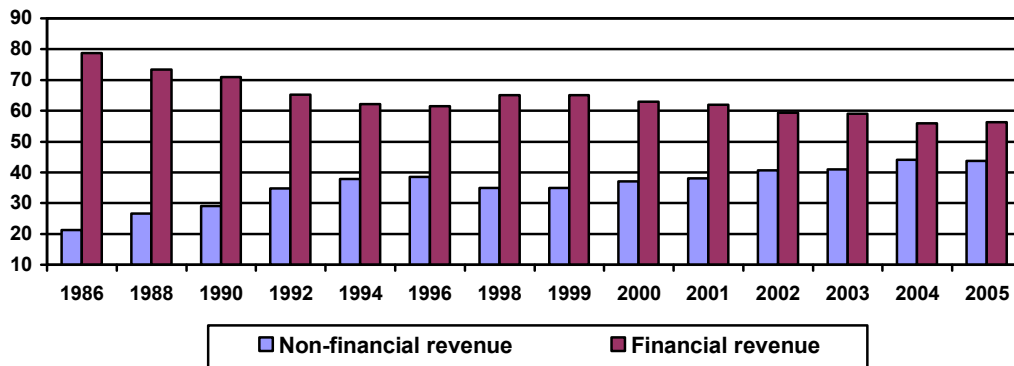
The integration of non-traditional activities in the cost function of banks is a recent idea, we find particularly Clark and Siems (2002) on U.S. data, Allen and Liu (2005) on Canadian banks and Pasiouras (2008 a) dealing with Greek banks. According to these authors, non-traditional activities continue to get more importance in the constitution of the assets of these banks (equity participations, portfolios management, service of deposit accounts, etc.). Therefore, exclude those activities from banking production would lead to a cost function poorly specified and lead to erroneous conclusions regarding the efficiency and economies of scale.

The empirical results of these authors show that such activities are important determinants in explaining the cost efficiency of banks. However, Pasiouras (2008 a) shows no significant effect of these activities on the efficiency of Greek banks. On a sample of 87 countries in transition, Lozano-Vivas and Pasiouras (2008) highlight a positive and statistically significant impact of non-traditional activities on cost efficiency of banks in different countries but a mitigate effect on profit efficiency.
Taking into account non-traditional activities in the productive combination of Tunisian banks will allow us to determine whether an increased size of banks (through the intermediation activity) is really a source of efficiency gains, or a diversification between traditional and non-traditional activities that would improve efficiency.

To this end, we consider the bank as a company which produces multiple outputs -including non-traditional services - using multiple inputs. Thus, the disintegration of the banking output (between intermediation activities and non-traditional activities) will allow better identification of the impact of financial liberalization on the efficiency of banks.

The measurement of non-traditional activities is a difficult task due to lack of bank assets that represent the volume of these activities, as loans which are a measure of intermediation activity. In empirical studies, authors use mostly bad proxies that are usually "non-interest income" or "Off-Balance Sheet items". These methods have several disadvantages because they include among the outputs (usually balance sheet items as loans or securities) a component of the state of result (the non-interest income) or off-balance sheet items that are in most cases future commitments that have not yet resulted in cash-flows.

To counter this problem, we chose to represent non-traditional activities by a more just proxy on the statistical side and more complete on the conceptual side: an "*Asset-Equivalent Measure of non-traditional activities* (AEM)" as proposed by Boyd and Gertler (1994). These authors announce that the rate of return on assets (ROA) is the same for traditional and non-traditional activities; therefore, it becomes possible to calculate the necessary Assets for the production of non-interest income by dividing the latter by the ROA of traditional activities.

To calibrate the models, we opted for the stochastic frontier approach (SFA) of a translog cost function. We used both the first introductions in terms of academic statistical measure of efficiency such as Aigner, Lovell and Schmidt (1977), the most recent contributions in the modeling of efficiency like Battese and Coelli (1992, 1995), Kumbhakar and Lovell (2003) and Greene (2005) while taking steps that might render account the specific characteristics of the Tunisian banking sector.

We divide this paper into three parts. The first part will deal with the empirical methodology; the second one gives the sample and data definition. The third part will display the empirical results and interpretations.

2. EMPIRICAL METHODOLOGY

This section seeks to trace the methodology chosen to study the impact of non-traditional activities on the level of performance assessed by cost efficiency. Cost efficiency will be estimated using the stochastic frontier approach (SFA) by adopting the translog specification of a cost function. The different regressions will be conducted under the assumption of variability of efficiency over time (*time varying efficiency*) according to the specification of Battese and Coelli (1992). The non-traditional activities will be included in the cost function as an output next to the traditional loans. The study covers a sample of 10 Tunisian commercial banks throughout the post liberalization period from 1986 to 2005.

2.1 The Model: stochastic frontier of a translog cost function
We adopt the SFA according to the basic model of Aigner, Lovell and Schmidt (1977) and we applied various adjustments to the cost function.
Thus, the stochastic frontier cost function depends on the price of inputs and quantities of outputs in accordance with the following relationship:

$$C = f(Q, W) + (\mu + \upsilon)$$

Where C is the cost of a bank, Q is the vector of outputs, W is the vector of prices of inputs.
$f(Q, W)$ represents a translog function which composed from individual values of Q and W and their cross product $(Q \times W)$.
(μ) is the cost of inefficiency, while (υ) is an error term which is by definition an independent and identically distributed variable (*iid*) according to the symmetrical normal distribution $N(0, \sigma_u^2)$.

The term (μ) contains both allocative and technical inefficiencies. [allocative inefficiency results from non optimal combination of inputs given the structure of relative prices, technical inefficiency is due to over-use of the quantities of available inputs].

Thus, the cost efficiency of a bank is defined as the ratio of the cost must be supported by the bank with the best practices to produce a given level of output and the effective cost of the bank (B):

$$Eff\ Co\hat{u}t = C^{min} / C_B$$

The problem of cost minimization bank can be represented as follows: we assume that the bank i ($i =$ 1, 2,........, N) produces the output $Q = (Q_1, Q_2,......, Q_m) \in R_m^+$ using inputs $X = (X_1, X_2,....., X_k) \in R_k^+$ with prices $W = (W_1, W_2,......, W_k) \in R_k^+$ and aims at the minimization of its costs according to the following equation:

$$Min\ C = \sum_{j=1}^{k} W_j X_j\ (Q, W)$$

Under the constraint of production: $F(Q, X) = 0$

We retain the parametric approach where the cost function translogarithmique takes the form of a stochastic frontier. As a result, the cost function will be logged as follows:

$$Ln\ C_{it} = Ln\ f(Q_{it}, W_{it}) + \varepsilon_{it} \qquad \begin{matrix} i = 1, 2,........, N \\ t = 1, 2,........, T \end{matrix} \qquad (1)$$

With:
C_{it}: the total cost of bank i at time t
Q_{it}: the vector of outputs (quantity)
W_{it}: the vector of price of inputs
N: the number of banks in the sample
T: the number of periods

ε_{it} : an error term that measures the distance from the cost of the bank from the efficiency frontier. It is due to two factors: the inefficiency cost and measurement errors.

$$\varepsilon_{it} = \mu_{it} + \upsilon_{it}$$

Where μ_{it} is a term of inefficiency and υ_{it} is an error term that captures random effects and measurement errors.

In Aigner, Lovell and Schmidt (1977), it is assumed that:
- Error terms υ_{it} follow a symmetrical normal distribution (because υ_{it} can have a negative or positive value)
- υ_{it} are independent and identically distributed (*iid*)
- υ_{it} are independently distributed according to the normal $N(0, \sigma_\upsilon^2)$
- The two terms υ_{it} and μ_{it} are independent.
- The terms of inefficiency μ_{it} do not always have the same specification (unlike the error terms υ_{it}).
- The most common assumption in the literature is that the terms of inefficiency μ_{it} follow a semi-normal distribution (or asymmetric distribution), *i.e.* represent the absolute value of a normal distribution $N(0, \sigma_\mu^2)$ (because μ_{it} as a measure of inefficiency can take only a positive value).

However, Stevenson (1980) contests this assumption and proposes a generalization in the form of a truncated normal distribution (μ, σ_μ^2) where the average μ may be different from zero. In the same view, Baccouche and Kouki (2003) show that the assumption of a semi-normal distribution leads to an overestimation of efficiency.

The estimate of the efficiency from the model (1) requires prior specification of the functional form of the cost function. Our choice is the translog form of a function cost multi-product, we will specify it in its standard form from the model (1) for *m* outputs and *k* inputs, where the values of *C* (total cost of the bank), *q* and *w* are taken in log as follows:

$$\text{Ln } C_{it} = \alpha_0 + \sum_{l=1}^{m} \alpha_k \ln q_{lt} + \sum_{j=1}^{k} \beta_j \ln w_{jt} + \frac{1}{2}\sum_{l=1}^{m}\sum_{j=1}^{m} \sigma_{lj} \ln q_{lt} \ln q_{jt} + \sum_{l=1}^{m}\sum_{j=1}^{k} \rho_{lj} \ln q_{lt} \ln w_{jt} +$$

$$\frac{1}{2}\sum_{l=1}^{k}\sum_{j=1}^{k} \delta_{lj} \ln w_{lt} \ln w_{jt} + \mu_{it} + \upsilon_{it} \qquad (2)$$

This function is assumed positive (since prices and outputs are positive), homogeneous of degree 1, monotone and concave in prices (because prices can not increase infinitely).

Homogeneity means that a proportional increase in all prices increases the total cost in the same proportion without affecting the request of factors. It is therefore necessary to impose some restrictions on the parameters to obtain a homogeneous cost function as follows:

$$\sum_{j}^{k} \beta_j = 1$$

$$\sum_{j}^{k} \rho_{lj} = 0$$

$$\sum_{j}^{k} \delta_{lj} = 0$$

The homogeneity restrictions are embodied in the cost function by normalizing total cost and prices of inputs by one of the prices (we choose the price of input 1: w1).
This gives the translog cost function as follows:

$$\log(C/W_1) = \alpha_0 + \sum_{j=2}^{k} \beta_j \log(W_j/W_1) + \sum_{l=1}^{k-1}\sum_{j=l+1}^{k} \delta_{lj}[W_lW_j - 0,5\times(W_l^2 + W_j^2)] + \sum_{l=1}^{m}\sum_{j=2}^{k} \gamma_{lj}q_l \log(W_j/W_1)$$

$$+ \sum_{l}^{m} \alpha_l q_l + \mu + \upsilon \qquad (3)$$

The estimation of model (3) by the method of likelihood maximum will measure the cost efficiency of banks surveyed.

2.2 Time varying efficiency: the specification of Battese and Coelli (1992)

The major difficulty in the handling of a panel over a long period is in violation of the assumption of the constancy of the specific effects of firms through time. It is clear that the previous model (model 3) does not take into account the variability of the efficiency term through time. With Cornwell, Schmidt and Sickles (1990) and Battese and Coelli (1992) that there is a formulation of the efficiency taking into account the dimension time.

Cornwell, Schmidt and Sickles (1990) propose to solve this problem by replacing the coefficient on firm's effects by a flexibly parameterized temporal function. Battese and Coelli (1992) have adopted the same principle and have extended the model of Aigner, Lovell and Schmidt (1977) on panel data (unbalanced) where the firm's effects on production (*i.e.* the terms of inefficiency U_i) are assumed to vary systematically over time and are distributed according to the truncated normal distribution. Thus, the stochastic frontier of a production function is given as follows:

$$Y_{it} = X_{it}\beta + (V_{it} - U_{it}) \qquad\qquad i = 1,............, N$$
$$t = 1,............, T$$

The definition of Y_{it}, X_{it} and β is already given in the model of Aigner, Lovell and Schmidt (1977). The error terms V_{it} are *iid* according to the symmetrical normal N (0, σ_V^2) and are independent of terms U_{it}. The terms of inefficiency U_{it} are *iid* according to the truncated normal distribution N (μ, σ_U^2). With:

$$U_{it} = U_i exp[-\eta(t-T)]$$

The specification of technical inefficiency term highlights the assumption of variability of this term through time. η is a parameter to estimate.

The authors use the parameterization of Battese and Corra (1977) to replace σ_V^2 and σ_U^2 by $\sigma^2 = \sigma_V^2 + \sigma_U^2$ and $\gamma = \sigma_U^2/(\sigma_V^2 + \sigma_U^2)$. The parameter γ varies between 0 and 1 and reflects the part of the variability of the inefficiency term in the total variability of the random terms.

3. PRESENTATION OF THE SAMPLE AND DATA DEFINITION

The study period is the post-liberalization period; it covers the years between 1986 and 2005. The translog function requires for a better specification of the efficiency scores, a long study period. In our work, the sample consists of 10 commercial Tunisian banks which data availability is guaranteed throughout all the study period. Development banks are excluded a priori because their behavior in terms of mix of inputs and outputs are not comparable with the commercial banks.

The choice of 10 commercial banks is based, insofar as they occupy an important place in the allocation of available resources in Tunisia. Indeed, commercial banks dominate the sector in term of size.

3.1 Production of the bank and definition of data

Before defining the data, it is essential to choose the approach that allows bank to place deposits among inputs or among outputs, according to what is in the intermediation approach or in the production approach.

We adopt the approach of intermediation implying that banks minimize their costs by using multiple inputs, including bank deposits, to produce multiple outputs. The input is recognized that it is a resource for the bank that can be transformed to produce an output (a bank service). In the context of Tunisia, the deposits are collected to ensure a loan policy and the bank is an intermediary who uses deposits as a resource to provide credits service to the borrowers.

Data are collected from the annual balance sheets and income statements of banks surveyed. Other data are published in the Financial Statistics of the Central Bank of Tunisia and in the annual reports of the Professional Association of Tunisian Banks (APBT).

We will opt for the disaggregation of data for better characterization of the productive combination of banks. The specification of a stochastic frontier of a cost function requires the formation of a vector of input prices (W_{it}) and a vector of outputs (q_{it}).

The input vector consists of three variables:

- Capital (net fixed assets): K
- Labor (the number of bank employees): L
- Deposits (bank deposits): D

Their prices are calculated as follows:
- The price of capital is calculated as "the depreciation of fixed assets / fixed assets" : W1
- The price of labor is equal to "payroll / number of employees" : W2
- The price of deposits is measured by "interest expense paid by the bank / total deposits" : W3.

The total cost of the bank = $\sum price \ of \ the \ inputs$ = Depreciation on fixed assets + staff costs + interest paid by the bank on all its deposits.

Disaggregation provides an output vector composed of two variables:
- The bank loans (q1): composed of loans on banking and financial institutions, loans on special resources and other loans to customers.
- An "*Asset-Equivalent Measure of non-traditional activities* (*AEM*)": (q2).

Measuring non-traditional banking activities is a difficult task because of lack of data. The idea of an Asset-Equivalent Measure of non-traditional activities has been suggested by Boyd and Gertler (1994). The idea is to *capitalize the non-financial income of a bank to represent the necessary assets to achieve such income*. Assuming that the return on assets (ROA) is the same for traditional and non-traditional activities, it is possible to calculate the necessary assets for the production of income other than interest.

In recent work, to measure the impact of non-traditional activities on the efficiency of banks, Clark and Siems (2002) and Allen and Liu (2005) prefer the approach of Boyd and Gertler (1994) because it has several advantages despite its few theoretical limits.

We will expose this method and its theoretical limits. After, we propose an improved version of the approach of Boyd and Gertler that fits properly in the Tunisian banking sector.

3.2 Measurement of non-traditional banking activities: the approach of Boyd and Gertler (1994)

The non-traditional activities are recognized by their income; the non-financial revenue that composed of fees and income on securities transactions.

Rogers (1998) proposes that non-traditional activities are taken into account by their income (the non-financial revenue). He suggested that the non-financial revenue should be included in the cost function as a proxy of non-traditional activities. This approach, often used in earlier works (Losano-Vivas and Pasioura, 2008), has a major drawback: the production bank is represented in the cost function for both stocks (assets) and flows (revenues).

Boyd and Gertler (1994) adopt a more interesting approach is to introduce in the cost function an Asset-Equivalent Measure of non-traditional activities. They admit that the assets of the balance sheet produce the financial income and the Off-balance sheets, where we find the majority of non-traditional activities, give the non-financial revenue.

They add that given the credit risk inherent in traditional activities, it would be reasonable to deduct from income the financial allocations to provisions for non-performing loans.

As a result, bank income according to the authors will be determined in accordance with the following relationship:

$$\underbrace{\pi}_{\substack{\text{Net bank} \\ \text{revenue}}} = \underbrace{II - IE - PROV}_{\substack{\text{Net interest} \\ \text{income}}} + \underbrace{NII - NE}_{\substack{\text{Net non-interest} \\ \text{income}}}$$

Where:
II: Interest Income
IE: Interest Expenses
PROV: Provisions for non-performing loans
NE: Non Interest Expenses
NII: Non Interest Income.

They also assume that:
i) The non-financial income is generated solely on the basis of hypothetical Off-Balance Sheet (A_0) and;
ii) A_0 generates the same rate of return (ROA) that Balance Assets A_b.

The rate of return on assets (ROA) is defined by Boyd and Gertler as:

$$\text{ROA} = \frac{II - IE - PROV}{A_b}$$

By adopting the assumption of equal rates of return of the balance sheet and Off-balance sheet activities, we have:

ROA = Non-financial revenue / Assets generating the non-financial revenue
  = Non-financial revenue / A_0

The result:
A_0 = Non-Financial revenue / ROA

As a result, the AEM is given by the following expression:

$$AEM = A_0 = \frac{Non\ financial\ revenue}{ROA} = A_b [\frac{NII - NE}{II - IE - PROV}]$$

Thus, the measure of AEM can be seen as a hypothetical portfolio of assets required to produce non-financial income of banks. With this approach, it is now possible to calculate the 2nd output (q_2) from the available data on commercial Tunisian banks.

4. EMPIRICAL RESULTS AND INTERPRETATIONS

This section will present the results of regressions of a stochastic frontier of cost function. In a first step we estimate the stochastic frontier under the assumption of a time-varying efficiency according to Battese and Coelli (1992). This assumption is justified because the study period is long (20 years), allowing the dimension of time to act on performance.

We also adopted the assumption of a symmetrical normal distribution for the error term (υ) and a truncated normal distribution for the inefficiency term (μ). All estimations are performed with the econometric software STATA 9.1.

To specify the exact level of significance of non-traditional activities, robustness tests are then conducted to ascertain the role of such activities in determining the efficiency of banks.

The nature of economies of scale and the effect of size on efficiency are finally analyzed for lead to insights about the determinants of the efficiency of Tunisian banks.

4.1 Results of regression of the stochastic frontier
By integrating the two outputs: q1 (bank loans) and q2 (the AEM) with three inputs prices W1 (price of capital), W2 (price of labor) and W3 (price of deposits), the stochastic frontier of a translog cost function described above in the model (3) takes the following form:

$$Log\ (C/W_1) = \alpha_0 + \alpha_1 \log(q1) + \alpha_2 \log(q2) + \beta_1 \log(W_2/W_1) + \beta_2 \log(W_3/W_1) + \frac{1}{2}\sigma_1 \log(q1)\log(q1)$$

$$+ \frac{1}{2}\sigma_2 \log(q2)\log(q2) + \frac{1}{2}\sigma_3 \log(q1)\log(q2) + \rho_1 \log(W_2/W_1)\log(q1) + \rho_2 \log(W_2/W_1)\log(q2)$$

$$+ \rho_3 \log(W_3/W_1)\log(q1) + \rho_4 \log(W_3/W_1)\log(q2) + \frac{1}{2}\delta_1 \log(W_2/W_1)\log(W_2/W_1)$$

$$+ \frac{1}{2}\delta_2 \log(W_3/W_1)\log(W_3/W_1) + \frac{1}{2}\delta_3 \log(W_2/W_1)\log(W_3/W_1) + \mu + \upsilon \qquad (4)$$

The estimate of model (4) by the method of maximum likelihood gives the following results:

TABLE 1: ESTIMATION OF THE PARAMETERS OF THE TRANSLOG COST FUNCTION UNDER THE HYPOTHESIS OF TIME-VARYING EFFICIENCY (1986-2005)

lC		Coefficients	Std-dev	z	P>z
lq1	α_1	1.541	0.382	4.03	0.000***
lq2	α_2	-0.507	0.175	-2.88	0.004***
lw2	β_1	-1.168	0.301	-3.88	0.000***
lw3	β_2	2.086	0.289	7.21	0.000***
lw2q1	ρ_1	0.122	0.036	3.38	0.001
lw2q2	ρ_2	0.032	0.013	2.48	0.013
lw3q1	ρ_3	-0.115	0.033	-3.40	0.001
lw3q2	ρ_4	-0.024	0.011	-2.16	0.031
lw3w3	δ_1	-0.040	0.036	-1.11	0.266
lw2w3	δ_2	0.170	0.068	2.50	0.012
lw2w2	δ_3	-0.118	0.044	-2.64	0.008
lq1q1	σ_1	-0.141	0.046	-3.08	0.002
lq2q2	σ_2	-0.002	0.001	-2.59	0.010
lq1q2	σ_3	0.059	0.028	2.07	0.039
Cons	α_0	4.183	1.958	2.14	0.033
mu	μ	-0.188	0.832	-0.23	0.820
eta	η	0.018	0.010	1.83	0.067
sigma2	σ^2	0.061	0.113		
gamma	γ	**0.9053**	0.174		
sigma_u2	σ_u^2	0.055	0.113		
sigma_v2	σ_v^2	0.005	0.000		
Log likelihood = 211.51933					

***, **, * Variables significant at 1%, 5% and 10%, respectively.

The parameter gamma (γ = 0.9053) reflects the relevance of the specification of the model estimated. This parameter measures the proportion of the variance of inefficiency term (μ) in the total variance of model ($\gamma = \sigma_\mu^2/(\sigma_\mu^2 + \sigma_\upsilon^2)$). This means that 90.53% of the distance of a bank over the "best practices" frontier is explained by the inefficiency cost (μ) and only 9.47% of the distance is due to measurement error (υ).

Given the significance of different variables, the output (q1) is positively and significantly on the cost banking. The positive sign means that the lending activity increases the cost bank, in other words by increasing the volume of loans, a commercial bank is unable to reduce its cost.

Two deductions can be made to that effect; on the one hand, the Tunisian banks operate at a size that approaches the optimal size inducing the stagnation of economies of scale or they are operating above their optimal size at which it is not possible to realize cost savings by increasing the volume of credits. Justifications on the presence of economies of scale and optimal size will be given later through an empirical test.

On the other hand, loans made by the Tunisian banks are of poor quality and instead of offering the bank the opportunity to realize cost savings by expanding the production of loans, they create additional burdens in the form of loss (in case of materialization of credit risk) or provisioning.

The results also exhibit the significance of output (q2) in the bank cost function reflecting *a priori* a positive contribution of non-traditional activities to the efficiency of Tunisian banks.

The negative sign assigned to the coefficient of this variable raises interest. It is possible, indeed, to improve the cost efficiency of banks by investing in non-traditional activities. These are likely to improve the performance of bank because they do not cost a lot of expenses, unlike the intermediation activities that require huge financial and operational charges (such as deposit remuneration, the establishment of new agencies, personnel costs, investment in new technologies for the modernization of banking services related to intermediation activities, etc.), not forgetting of course the credit risk closely linked to intermediation activities that might generate additional costs.

In addition, the price of input W2 (wage per employee) is negatively and significantly correlated to cost bank, reflecting its positive contribution to the efficiency of banks. This result find justification in the reality of Tunisian commercial banks that since 2000 is marked by a growth rate of

staff recruitment close to zero after reaching a maximum of + 5.49% in 1994, this rate becomes negative in 2003 with a value of - 0.73% arriving at - 2.22% in 2004 and -1.18% in 2005.

To calculate the cost efficiency scores under the hypothesis of time-varying efficiency, we used Battese and Coelli (1992) and Kumbhakar and Lovell (2003) to calibrate models.

Indeed, the inefficiency term U_{it} is assumed vary over time. This term is a function of time according to the following relationship:

$$U_{it} = U_i \times exp(- \eta(t - T))$$

T is the number of years of study and η a parameter whose value is given in the table above (Table1). The cost efficiency scores are measured in accordance with the following relationship:

$$Score_{it} = exp(-U_{it})$$

Thus, the following graph shows the evolution of efficiency scores estimated for the ten commercial banks over the entire period (1986-2005).

GRAPH 2: AVERAGE EFFICIENCY LEVELS (%)
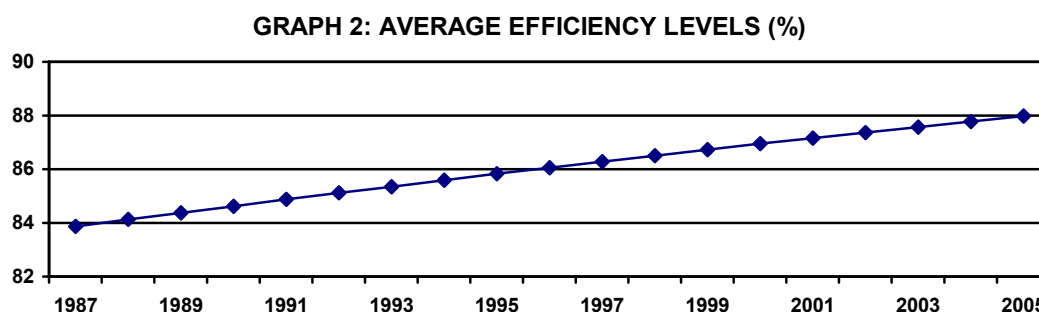
The average efficiency of the sector during the period (1986-2005) is estimated at 85,886%. This result means that the cost of banks is above the efficiency frontier of 15,221%, in other words there is a waste of resources in the Tunisian banking sector in the order of 15,221%.

Moreover, the average efficiency shows a steady evolution on the post-liberalization period. This allows saying that the financial reforms undertaken since 1986 have enabled an increase in overall performance of the banking sector in terms of efficiency. Indeed, this trend towards higher levels of efficiency is due to intensified interbank competition induced by freedom given to banks in their activities in terms of price and volume.

A banking system is efficient if the efficiency gaps compared to the frontier of "best practices" are relatively small and tend to diminish over time. Can we, for this purpose, define the Tunisian banking sector to efficient or not? We answer this question by conducting the analysis on other aspects of the industry. In this regard, we will split the scores of efficiency found in two groups of banks according to the ownership structure. Results appear in the table below:

TABLE 2: EFFICIENCY LEVELS (PUBLIC BANKS - PRIVATE BANKS) IN %

Public Banks				
Banks	*Mean Efficiency*	*Max.*	*Min.*	*Standard-deviations*
STB	67.920	72.420	63.101	2.903
BNA	71.025	75.177	66.556	2.685
BH	85.174	87.486	82.634	1.511
BS until 2005	87.502	89.476	85.328	1.291
UIB until 2002	89.455	91.136	87.596	1.102
Average	80.215	83.1389	77.043	1.898

Private Banks				
Banks	Mean Efficiency	Max.	Min.	Standard-deviations
BIAT	72.406	76.396	68.102	2.583
AB	91.919	93.224	90.474	0.856
UBCI	97.130	97.605	96.601	0.313
BT	97.955	98.294	97.575	0.224
ATB	98.382	98.651	98.081	0.177
Average	91.558	92.834	90.166	0.830
Average efficiency of all the sample = 85.886				

Classified by ownership structure, banks show significant differences in terms of efficiency. Indeed, private banks are more efficient than public banks, with the exception of BIAT. A result that suggest that private banks, by their small size, would be able to better supervise the allocation of their resources and better control their costs. In addition, by their private capital structure, the incentive for leaders to maximize the wealth of shareholders is strengthened and the agency problems are reduced. Fuentes and Vergara (2003) confirmed the same result on Chilean banks, Williams and Nguyen (2005) show that privatization promotes improved efficiency and productivity of banks in Southeast Asia.

The backwardness of public banks in terms of efficiency can be explained by the fact that these banks have a treatment of privilege from the government, they are indeed rescued by the state in case of difficulty and can therefore benefit from some informal measures in respect of guarantees, which feeds the phenomenon of moral hazard in these banks. The impact of this phenomenon is likely to lower their performance assessed by the scores of efficiency.

Furthermore, according to an ascending degree of efficiency average (from lowest score to highest score), we obtain the following ranking of banks in the sample:

GRAPH 3: CLASSIFICATION OF BANKS ACCORDING TO THE LEVEL OF EFFICIENCY
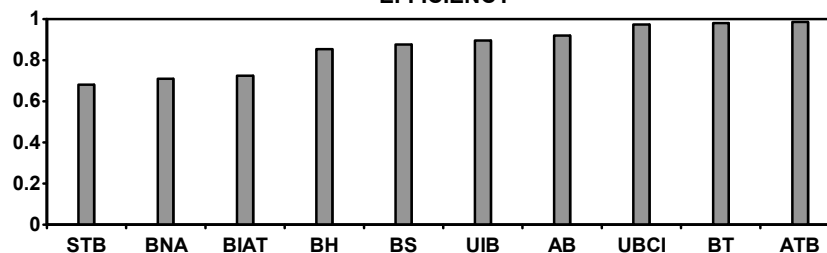
Taken individually, smaller banks (mostly private) are the most efficient compared to large banks (generally public), reflecting the absence of positive relationship between size and efficiency. This result is explained by the fact that large banks are the motor of financing the Tunisian economy with a market share of around 50% for both the private and public sector. They therefore accumulate a large volume of nonperforming loans. Not very concerned with the quality of their assets and risk, these banks are less efficient because they are suffering from a misallocation of resources and an under-evaluation of credit risk.

This result comforts what Berger and De Young (1997) suggest that large banks are generally public institutions created to meet the needs of the economy and investment with certain political priorities, they add that the inefficiency of these institutions is due to the phenomenon of moral hazard. Private Banks, however, have rather a more strict and prudential policies in their credits.

It has been shown that the variable which measures the non-traditional banking activities exhibited a negative and significant effect on the cost function. To ascertain the impact of these activities on bank efficiency, we propose the following to do other control tests.

4.2 The significance of non-traditional activities: robustness tests

To test further the role of non-traditional activities and their contribution to the bank performance and to confirm the conclusions reached above concerning the significance of these activities we will carry out other tests of robustness.

As a first step, we estimate stochastic frontier defined above by the model (4) but by removing the output of the non-traditional activities (q2) of the model and keep only output (q1) representing the volume of credits. The efficiency scores calculated by this regression (traditional model) will show if the omission of the output (q2) have an impact on the efficiency of banks.

To increase the certainty with respect to the role of these new activities, we estimate in a second step, the same function (model 4) but by incorporating an aggregate output Q which is the sum of two outputs (q1) and (q2).

If the scores of the second regression are higher than the scores of the first regression, this means that non-traditional banking activities impact positively on the bank performance. If the scores remain unchanged it means that these activities are without significant effect on performance. If, however the scores down, a deduction from an adverse effect of these activities would be permitted.

a/ Omission of non-traditional activities: the traditional model

The specification of a stochastic frontier of cost function by failing output (q2) and preserving only (q1) is given by the following:

$$Log\,(C_{it}) = \alpha_0 + \alpha_1 \log(q_{1it}) + \beta_1 \log(W_{1it}) + \beta_2 \log(W_{2it}) + \beta_3 \log(W_{3it}) + \frac{1}{2}\sigma_1 \log(q_{1it})\log(q_{1it})$$

$$+ \rho_1 \log(W_{1it})\log(q_{1it}) + \rho_2 \log(W_{2it})\log(q_{1it}) + \rho_3 \log(W_{3it})\log(q_{1it}) + \frac{1}{2}\delta_1 \log(W_{1it})\log(W_{1it})$$

$$+ \frac{1}{2}\delta_2 \log(W_{2it})\log(W_{2it}) + \frac{1}{2}\delta_3 \log(W_{3it})\log(W_{3it}) + \frac{1}{2}\delta_4 \log(W_{1it})\log(W_{2it}) +$$

$$\frac{1}{2}\delta_5 \log(W_{1it})\log(W_{3it}) + \frac{1}{2}\delta_6 \log(W_{2it})\log(W_{3it}) + \mu_{it} + \upsilon_{it} \qquad (5)$$

The results of the regression of model (5) are listed in the following table:

### TABLE 3: ESTIMATION OF THE PARAMETERS OF THE TRANSLOG COST FUNCTION (WITH ONLY Q1)

lC		Coefficient	Std-dev	z	P>z
Lq1	α_1	2.465	0.692	3.56	0.000***
Lw1	β_1	0.602	0.282	2.13	0.033**
Lw2	β_2	-3.536	0.852	-4.15	0.000***
Lw3	β_3	1.707	0.483	3.53	0.000***
Lq1q1	σ_1	-0.196	0.061	-3.18	0.001
Lw1w1	δ_1	0.021	0.016	1.26	0.207
Lw2w2	δ_2	-0.471	0.106	-4.41	0.000
Lw3w3	δ_3	0.094	0.082	1.14	0.254
Lw1w2	δ_4	0.058	0.074	0.79	0.429
Lw1w3	δ_5	0.077	0.047	1.62	0.106
Lw2w3	δ_6	-0.366	0.138	-2.65	0.008
Lq1w1	ρ_1	-0.033	0.025	-1.32	0.187
Lq1w2	ρ_2	0.325	0.079	4.12	0.000
Lq1w3	ρ_3	-0.025	0.032	-0.80	0.421
Cons	α_0	-2.810	4.138	-0.68	0.497
mu	μ	-2.038	19.920	-0.10	0.919
eta	η	0.023	0.011	2.01	0.045
sigma2	σ^2	0.247	2.138		
gamma	γ	**0.9791**	0.180		
sigma_u2	σ_u^2	0.242	2.138		
sigma_v2	σ_v^2	0.005	0.000		
Log likelihood = 224.44886					

The model is better specified when the output includes only q1, with a gamma value near unity (gamma = 97.9%). The output (q1) keeps its significantly positive effect and the price of labor (W2) has a negative effect on cost.

In calculating the efficiency scores from this regression, we find that the scores are slightly overestimated and the displacement is not significant compared to the scores of the previous regression (model 4). The following chart confirms this statement:

GRAPH 4: EFFECT OF EXCLUSION OF NON TRADITIONAL ACTIVITIES
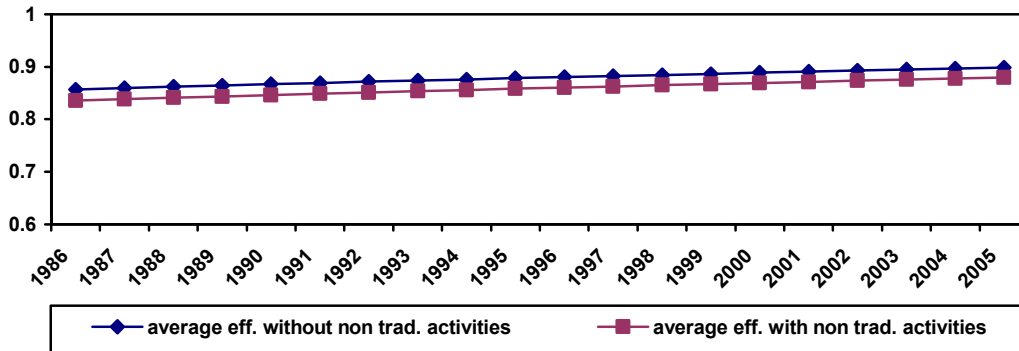
The average efficiency, where (q2) is omitted from the cost function, has increased to 87,821%, i.e. an excess of 2 points compared to the old scores (85,886%). The diagram also shows that a proportional increase is produced annually. It can be inferred for this purpose that the role of non-traditional banking activities is not confirmed with this test, the integration or the omission of the cost function on the output of these activities, it does not change not really the level of efficiency of banks surveyed.

**b/ Aggregation of banking activities**

When integrates aggregate output Q = q1 + q2 in place of the output q1, the stochastic frontier of the translog cost function takes the following form:

$$Log(C_{it}) = \alpha_0 + \alpha_1 \log(Q_{it}) + \beta_1 \log(W_{1it}) + \beta_2 \log(W_{2it}) + \beta_3 \log(W_{3it}) + \frac{1}{2}\sigma_1 \log(Q_{it})\log(Q_{it})$$

$$+ \rho_1 \log(W_{1it})\log(Q_{it}) + \rho_2 \log(W_{2it})\log(Q_{it}) + \rho_3 \log(W_{3it})\log(Q_{it}) + \frac{1}{2}\delta_1 \log(W_{1it})\log(W_{1it})$$

$$+ \frac{1}{2}\delta_2 \log(W_{2it})\log(W_{2it}) + \frac{1}{2}\delta_3 \log(W_{3it})\log(W_{3it}) + \frac{1}{2}\delta_4 \log(W_{1it})\log(W_{2it}) +$$

$$\frac{1}{2}\delta_5 \log(W_{2it})\log(W_{3it}) + \mu_{it} + \upsilon_{it} \qquad (6)$$

The specification of the model is less relevant when we replace the output q1 by the aggregate output Q, the gamma level decreased to 86.2%. The aggregate output Q has a positive and significant effect at 1% on the cost function.

The efficiency scores from two regressions (Model 5 and Model 6) under the hypothesis of a variable time are included in the following graph:

GRAPH 5: IMPACT OF NON TRADITIONAL ACTIVITIES ON EFFICIENCY (%)
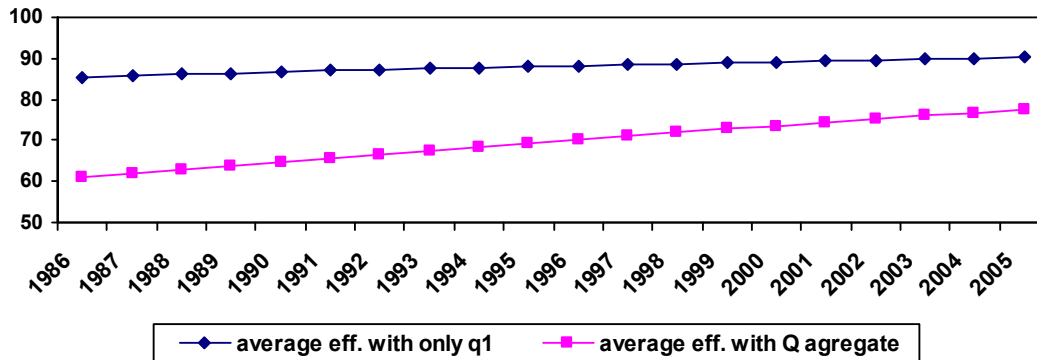
From the graph above, two points deserve to be drawn. First, levels of efficiency when the output (q1) is considered are more important than when the aggregate output is integrated. Then, a convergence over time affects the evolution of the lowest scores to highest scores.

These results raise the following comments:

The decline in average levels of efficiency when aggregate measure incorporates a combination of traditional intermediation and non-traditional activities, is explained by the costs in addition to expenses of the bank, arising from the exercise of new activities beside pure intermediation activities.

The gap between the scores of efficiency is very important at the beginning of the period, reflecting the lack of expertise in the exercise of these non-traditional activities. Nevertheless, the trend toward convergence is a sign of improving performance through learning over time.

When the scores of two regressions are ordered by bank, the gap is not the same for all banks. The following chart shows these facts:

GRAPH 6: IMPACT OF NON TRADITIONAL ACTIVITIES ON EACH BANK
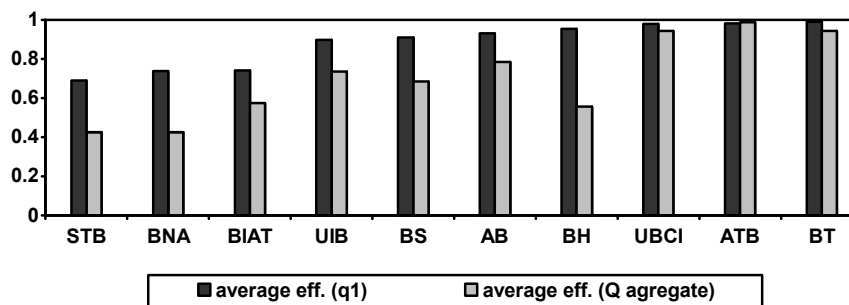
There is a high gap in the three public banks (STB, BNA and BH) against a very small difference for smaller private banks (BT, ATB and UBCI). This reflects that the exercise of non-traditional activities does not decrease the performance of smaller banks, unlike larger banks that seem to see their performance deteriorate in carrying out activities other than intermediation.

Overall, the results of complementary tests suggest that the effect of non-traditional activities on the efficiency is different depending on banks, small banks (mostly private) seem to enjoy such activities to improve their efficiency but the big banks (generally public) do not yet have the necessary expertise to benefit from the positive contribution of these activities to their efficiency. However, a trend towards improving the performance of banks has been noted with these new activities, but the effect can not be well measured currently because it is in the long term it should analyze the impact of such new activities.

4.3 The economies of scale

We have shown above that the lending activity is not favorable to efficiency in the Tunisian banking industry, we have sent this to the possibility that Tunisian banks are close to their optimal size beyond which it becomes impossible to realize cost savings by expanding the credits production. To have a confirmation for this deduction, we measure economies of scale to determine the effect of size on the efficiency of banks.

Economies of scale of banks are obtained from the derived bank costs *C* compared to the output *q* according to the general model as follows:

$$RE = \frac{\partial Ln\left(C_{it}\big/W_{it}\right)}{\partial Ln\, q_{it}}$$

Economies of scale give an idea of the cost saved/wasted when a bank increases the volume of production while keeping constant the mix of outputs. As a bank does not reach its optimal size, it can still benefit from economies of scale (or increasing returns to scale).

The following expression is obtained by deriving the translog cost function mono-product defined above in the model (5) compared to the output (q1):

$$RE = \frac{\partial Log\left(CT_{it}\big/W_{1it}\right)}{\partial Log\, q_{1it}} = \alpha_1 + \sigma_1 \log(q_{1it}) + \rho_2 \log(W_{2it}/W_{1it}) + \rho_3 \log(W_{3it}/W_{1it}) \quad (7)$$

When;
- RE <1: The returns to scale are increasing and we are in the presence of economies of scale as the bank grows, so efficiency of scale exists.
- RE = 1: There are constant returns to scale and in this case the bank reached its optimal size.
- RE> 1: The returns to scale are decreasing and we are in the presence of diseconomies of scale as the bank expands.

The following chart lists the results from model (7) relating to economies of scale in the commercial banking sector in Tunisia.

GRAPH 7: ECONOMIES OF SCALE OF TUNISIAN BANKS
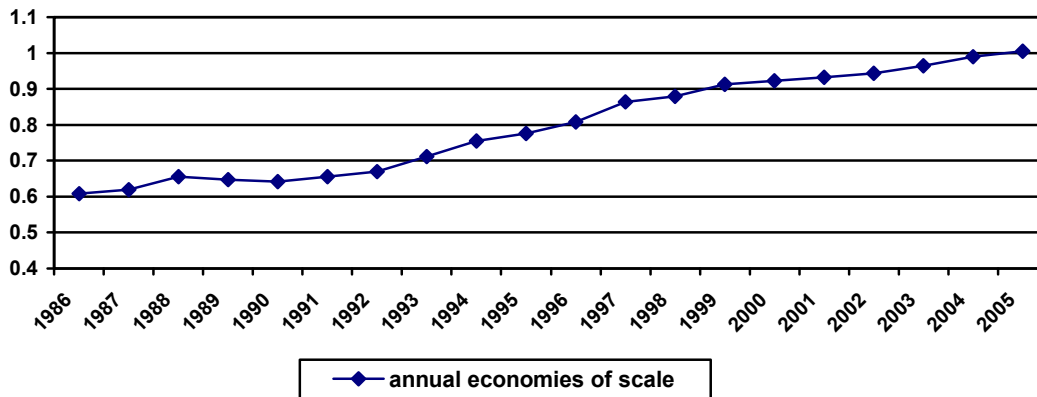
Economies of scale show a clear trend during the period 1986-2005 increased from 60.7% in 1986 to 100.4% in 2005. On average, the Tunisian banking sector operates with increasing returns to scale which means the coefficient is located at 79.80% but from 1999 he began to exceed 90%.

It seems therefore that the majority of Tunisian banks can realize cost savings by increasing production volume (measured here by the loans), but it should be noted that banks are from 1999 closer to their optimal size where the opportunities for exploitation of economies of scale will be fully drawn. The following table shows results that justify this.

TABLE 4: RETURNS TO SCALE OF TUNISIAN BANKS CLASSIFIED BY SIZE

Large banks				
Banks	Average R. to scale	Maximum	Minimum	Std. deviation
BNA	0.837	1.051	0.647	0.146
STB	0.832	1.042	0.665	0.137
BIAT	0.824	1.061	0.599	0.169
Average	0.831	1.051	0.637	0.151
Medium banks				
BH	0.840	1.006	0.630	0.113
UIB	0.776	1.016	0.578	0.142
BS	0.766	0.981	0.593	0.144
AB	0.761	0.973	0.566	0.145
Average	0.786	0.994	0.592	0.136
Small banks				
BT	0.781	0.956	0.592	0.131
UBCI	0.779	0.978	0.566	0.154
ATB	0.779	0.977	0.596	0.130
Average	0.779	0.970	0.584	0.139
Average Return to scale for all banks (1986-2005) = 0.798				

The numbers above show that large banks have in recent years reached their optimal size beyond which an increase in production would result in a more than proportional rise in costs; they are in phase of diseconomies of scale. Indeed, it is theoretically admitted that with learning, all the functions practiced by the bank will be controlled and achieving their optimal size each, the opportunities to lower costs are fully exploited and the bank reached in this case its optimal size.

The examination of returns to scale for small banks leads us to conclude that the coefficients are approximately the same and the size of these banks is sub-optimal until 2005; opportunities for exploiting economies of scale are always possible. This result agrees with Rime and Stiroh (2003) on Swiss banks and Rezvanian and Mehdian (2002) on Singaporean banks.

For medium-size banks, it is noted that from 2003 the coefficient of returns to scale is beyond 96%, these banks have stagnation in the exploitation of economies of scale and are approaching the optimal size.

In total, we can say that overall stagnation in costs gains was installed during the last years. This confirms the views put forward previously regarding the positive and significant effect of output (q1) on the banking cost function. It follows that the intermediation activity of Tunisian banks is no more a source of efficiency gains. Now, they are called to enlarge the scale of their production and move to another level of activity, to benefit from the positive effect of size.

5. CONCLUSION

In this paper we have used the stochastic frontier approach (SFA) and we adopted the method of Boyd and Gertler (1994) to determine an Asset-Equivalent Measure of non-traditional activities. The empirical results obtained are several; some are successful others are mixed, they lead to the following conclusions:
Tunisian commercial banks display during the period (1986-2005) an average efficiency estimated at 85,886%, which implies the presence of a waste of resources of about 15,221%.

Levels of efficiency achieved are marked by a progressive improvement throughout the study period. This result is due to the implementation of financial liberalization measures since 1986 that has

stimulated competition between banks and which allowed a better exploitation of economies of scale through the removal of constraints on interest rates and volumes of loans.

Furthermore, although the activity of intermediation has seen an acceleration phase since the implementation of financial liberalization program and has started from 1999 a significant rise in the volume of loans, they appear with a significant positive impact in all regressions of the cost function, an effect that results in weakening levels of efficiency.

This result implies that by increasing the activity of loans, a commercial bank is unable to achieve cost savings. This deduction is supported by the test on the existence of economies of scale, which showed that the majority of banks are close to their optimal size and cost gains begin to stabilize in 1999 to zero in some large banks.

The activity of the Tunisian banks is therefore not a source of efficiency gains due to on one hand the size inducing the stagnation of economies of scale and on the other hand, accumulation of bad loans in the assets of these banks. The urgency to capitalize the Tunisian banks and to clean their claims portfolios is necessary.

A more personalized analysis of results shows a better efficiency for smaller banks (mostly private) than larger ones (generally public) which present the lowest scores of efficiency. It follows that small banks have a better control of costs because they can better monitor their activities and better control their expenses. The largest banks (generally public) are still suffering from the problems of non-performing loans and are most exposed to the phenomenon of moral hazard.

It seems that the efficiency of banks is determined by non-traditional banking activities. These are likely to improve the cost performance because they do not cost a lot of expenses, unlike the intermediation activities that require huge financial and operational charges (such as deposit remuneration, the establishment of new agencies, personnel costs, investment in new technologies for the modernization of banking services related to intermediation activities, etc.) not forgetting of course the credit risk closely linked to such activities that might generate additional costs.

Additional tests have displayed that the importance of non-traditional activities varies according to the bank. Indeed, public banks can not increase their performance via exercising these activities, but an improvement in efficiency is observed over time which shows the possible acquisition of skills by learning in the long term. Private banks seem to benefit from these activities to improve their level of performance because they are motivated by maximizing their profits to meet the needs of shareholders and therefore they are forced to opt for diversification.

Upon completion of this work, the answer to the dilemma that Tunisian banks are exposed: to enlarge the size of the intermediation activity to achieve economies of scale or to mix their fields of activities between loans activity and non-traditional activities to benefit from economies of scope, seems to be leaning towards the option of diversification of banking activities.

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ANALYSIS OF FINANCIAL RISK IN THE CONTEXT OF FINANCIAL CRISIS

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ABSTRACT

Another form of the risk in a company's activity is the financial risk described as the risk that a company will not have adequate cash-flow to meet financial obligation. This paper presents some of the ways of analysing and interpreting financial risk such as using the concept of global breakeven or critical point, the approach referring to profit as the result of a financial policy that implies a relation between owners' capitals and liabilities and the last approach of financial risk refers to its evaluation from the perspective of return on equity variability against the average return on equity ratio. The actual context of the global financial crisis demands a deepened organization's analysis, the identification of its weaknesses and the strengths and defining with accuracy the major activity of the organization and the appropriate sources for its financing.

Keywords: *financial risk, breakeven point, elasticity coefficient, elasticity coefficient, turnover*

1. INTRODUCTION

The financial activity in the majority of its sectors is influenced by the unknown, by restrictive elements through their evolution, often unexpected, that isn't influenced directly by the economic agents. The entities that appeal to loans have to put up systematically with the financial expenses related with the loan. That is why the debt through its volume and cost determines a great variability of the entity's result and automatically modifies the financial risk.

Financial risk expresses the variability of results indicators from the point of view of the financial structure of the company (the ratio between owners' capital and liabilities) and it results strictly from the company's leverage degree. It can be defined as the risk that a company will not have adequate cash-flow to meet financial obligation. This type of risk is an additional one to all others because it appears only when a company uses debt in addition to equity financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

The company's leverage degree resulting either from bond financing credit or from bank credit influences the financial administration of the company. Due to the fact that the financial tasks determined by loans and expressed in interests and fees are not related to profit (they are considered to be fixed), the difference between the higher ratio of the return on equity and the cost of the loan is up to the company itself. As a result, any decrease in the return on equity leads to the risk of profit decrease or annulment.

2. WAYS OF ANALYSING AND INTERPRETING FINANCIAL RISK

2.1. A first point of view in the analysis of financial risk refers to the use of the concept **global breakeven** or **critical (dead) point** that takes into account financial expenses (expenses with bank interests), which, at a certain activity level, are referred to as fixed incomes. The global breakeven point represents the point in which the net turnover cover the operating (fixed and variable) expenses but also interest expenses so that the result is zero; beyond this threshold the activity of the company becomes profitable. The global breakeven point is given by the relation:

$$NT^* = \frac{FI + I}{1 - \overline{R}v} \quad \text{where}$$

- NT^* represents the critical turnover or the dead point;

- FI represents fixed incomes;
- I represents expenses with interests corresponding the bank credits obtained by the company;
- $\overline{Rv}$ represents the average ratio of variable expenses.

Financial risk analysis having as starting point the global breakeven point is accomplished with the help of two indicators:

a) The position indicator of the net turnover against its critical level (the breakeven point) marked with „α" that can be expressed as follows:

☛ as absolute level: $\alpha = NT - NT^*$

☛ as relative level: $\alpha\% = \dfrac{NT - NT^*}{NT^*}$

The higher the position indicator the lower the financial risk.

b) The elasticity coefficient marked with **"e"**, represents profit's sensitivity to the turnover variation determined by a certain variation of the financial structure. Elasticity coefficient *"e"* shows the degree of increase in the gross result of the period for an increase with one monetary unit of the net turnover. Elasticity coefficient is expressed as follows:

$$ e = \frac{\dfrac{\Delta GR}{GR}}{\dfrac{\Delta NT}{NT}} = \frac{\dfrac{GR - GR^*}{GR}}{\dfrac{NT - NT^*}{NT}} \text{, where} $$

- GR represents the gross result of the period for a certain activity level (against a net turnover);
- GR^* represents the gross result of the period determined by the critical point, which is zero;
- NT represents the net turnover corresponding to a financial structure;
- NT^* represents the critical turnover;
- ΔGR represents the deviation of the gross result of the period as compared to the critical result;
- ΔNT represents the deviation of the turnover against the critical turnover;
- $\dfrac{\Delta GR}{GR}$ represents the deviation of the gross result of the period against the critical result for one result monetary unit;
- $\dfrac{\Delta NT}{NT}$ represents the deviation of the net turnover against the critical turnover for one unit sale volume.

From the relation above its results: $e = \dfrac{NT}{NT - NT^*}$.

The higher is the distance between turnover and critical point, this representing low financial risk, the lower is the "e" coefficient.

2.2. Another approach of the financial risk refers to profit as **the result of a financial policy that implies a relation between owners' capitals and liabilities.** Thus, it is necessary to analyze **elasticity coefficient** from the point of view of the leverage policy of the company. Leverage's influence on return on equity is also called effect of financial leverage or leverage effect. The financial leverage effect measures the positive or negative influence of leverage on return on equity. Return on equity ratio is expressed as shown below:

$$ ROE = \frac{NR}{E} x100 \text{ , where} $$

- NR represents the net result of the fiscal period;
- E represents the equity of the company.

In the relation above, the net result of the fiscal period (profit) is determined as follows:

$$NR = GR - GR \times i = GR (1-i) \text{, where}$$

- GR represents the gross result of the fiscal period;
- „i" represents tax on profit ratio.

The gross result of the period is determined according to the following model that presents financial expenses, respectively expenses with interest:

$$GR = EBIT - I \text{, where}$$

- EBIT represents earning before interest and taxes ;
- I represents expenses with interest.

Taking into account that return on assets expressed in one of its suggestive forms, that is assets earning power ratio (BEP), presents the capacity of the company's total assets (TA) to generate profit before interest and taxes (EBIT), as shown below:

$$BEP = \frac{EBIT}{TA} x100$$

From the relation above, there results: EBIT = TA x BEP.
Expenses with interest (I) may be calculated taking into account total financial liabilities (L) and the average ratio of bank interest ($\bar{r}d$) as follows:

$$I = L \times \bar{r}d \text{, where}$$

- L represents total financial liabilities;
- $\bar{r}d$ represents the average ratio of bank interest.

There results that return on equity may be expressed as shown below:

$$ROE = \frac{NR}{E} x100 = \frac{GR}{E}(1-i)x100 = \frac{EBIT-I}{E}(1-i)x100 = \frac{TAx\,BEP-I}{E}(1-i)x100 =$$

$$= \frac{(E+L)x\,BEP-L\,x\,\bar{r}d}{E} x(1-i)x100 = \left[BEP+(BEP-\bar{r}d)x\frac{L}{E}x100\right](1-i)$$

Note!!!
In the replacements made in the formula, we extrapolated balance sheet liabilities as being fully represented by financial banking liabilities.
This relation connect return on equity, return on assets and the degree of leverage.

The analysis of financial risk implies the determination of leverage efficiency over return on equity (estimated through ROE) and depends on the relation between return on assets (estimated through BEP) and interest's average ratio (rd%) making possible the occurrence of the following situations:

- If **BEP> rd %** there is a favorable situation for shareholders; in this case return on equity is an increasing function of the leverage degree. The company may further use leverage since there is an increasing ROE.
- If **BEP < rd %,** means that the cost of liabilities is higher than return on equity and return on equity is a decreasing function of the leverage degree. In this case it is necessary to minimize the relation liabilities/owners' capital since leverage influences the performance of the company.
- If **BEP = rd %** reflects a steadfast financial structure.
- If **BEP is low or fluctuant** in this case there is preferred the financing of the activity out of own capital.

2.3. A third approach of financial risk refers to its evaluation **from the perspective of return on equity variability against the average return on equity ratio** for the previous years, using for this purpose statistic models. The estimation of financial risk with the help of statistic methods may be achieved using

the following indicators:

a) The average square deviation of return on equity measured starting from the leverage effect as follows:

$$ROE = \left[BEP + \left(BEP - \bar{r}d \right) x \frac{L}{E} x 100 \right] (1 - i) \text{ where}$$

- the relation $\dfrac{L}{E}$ represents the leverage degree marked by D.

We assume that the tax on profit ratio is the same for all the years taken into account and, for the leverage degree, we estimate an average value $\overline{D}$. By using dispersion and its properties, we obtain the following relation:

$$\Gamma^2 \, ROE = (1 - i)^2 \, x \left(1 + \overline{D} \right)^2 x \Gamma^2 \, BEP \text{, where}$$

- $\Gamma^2 \, ROE$ - represents the average square deviation of return on equity

By calculating the radical, we obtain: $\Gamma ROE = (1 - i) \, x \left(1 + \bar{I} \right) x \, BEP$.

There may be noticed that the higher the variation of return on equity, the higher the leverage degree and the lower the tax on profit ratio are, the higher the financial risk.

b) The variation coefficient of return on equity marked with „Cv" is determined as follows:

$$Cv \, \% = \frac{\Gamma ROE}{\overline{ROE}} \, x \, 100$$

The further the variation coefficient goes from the 30% limit, the higher the financial risk. The same issues regarding the non correlation of data to inflation are appliable to the evaluation of financial risk of the company. In order to achieve an accurate evaluation of financial risk under inflation, it is necessary to previously adjust the results according to the inflation ratio.

The illustration of statistic methods in the measurement of financial risk is made according to a procedure similar to the one used in the evaluation of economic risk.

3. PRACTICAL APLICATIONS REGARDING FINANCIAL RISK ANALYSIS

Problem 1
Determine the global breakeven point that takes into account the financial activity in the measurement of financial risk, using the data of company X, presented below:

TABLE NO 1. ELEMENTS REQUIRED IN THE DETERMINATION OF THE GLOBAL BREAKEVEN POINT FOR COMPANY X

Indicators	Total
1. Fixed expenses (USD)	97.500
2. Average ratio of variable expenses	0,675
3. Turnover (USD)	350.000
4. Operating result (USD)	15.790
5. Expenses with interest, calculated at an average ratio of bank interest 10 % (USD)	13.000
6. Total balance sheet assets (USD)	500.000

Solution:
The critical turnover, taking into account the financial activity will be:

$$NT^* = \frac{97.500 + 13.000}{1 - 0,675} = \frac{110.500}{0,325} = 340.000 \; USD$$

If we compare this critical turnover with the critical turnover obtained in the calculation of economic risk (not taking into account leverage), there may be noticed that, in the calculation that took leverage into account, it is necessary to achieve a critical turnover with 40.000 higher so that the company should obtain a null result.

Problem 2
Given the same circumstances as for problem 1 and assuming that, in year N, the turnover achieved by company X is 350.000 USD, determine the category of financial risk that applies to the company and perform comparisons with the economic risk measured in the previous chapter.

Solution:
a) Position indicator:
☞**The position indicator in absolute values (absolute flexibility)** is obtained as follows:
    α = 350.000 - 340.000 = 10.000 USD.

☞**The position indicator in relative values (volatility coefficient)** is obtained as follows:

$$\alpha' = \frac{NT - NT^*}{NT^*} x100 = \frac{350.000 - 340.000}{340.000} x100 = 2,94\%$$

Company X obtains an activity volume only with 10.000 USD higher than its critical level. The financial risk status is quite poor since the level of the volatility coefficient is much lower than 10%. If the value volume of the activity remains the same, the company will be forced to relinquish or to diminish its financial leverage in order to obtain a comfortable level of financial risk.

b) The elasticity coefficient of profit „e" is obtained as shown below:

$$e = \frac{NT}{NT - NT^*} = \frac{350.000}{350.000 - 340.000} = 35$$

In comparison, the economic and financial risk calculated with the help of the breakeven point, for the analyzed company X, is the following:

TABLE NO 2. ECONOMIC AND FINANCIAL RISK FOR THE ANALYZED COMPANY X

Indicators	Economic risk	Financial risk
1. Global breakeven point (USD)	300.000	340.000
2. Position indicator:		
- in absolute value (USD)	50.000	10.000
- in relative value (USD)	16,66 %	2,94 %
3. Elasticity coefficient	7	35

If, from the point of view of the operating activity, the risk standing of company X was relatively steadfast, taking into account also the cost of its financing, the situation became worse. The position indicator calculated by taking into account leverage is highly reduced, while the sensitivity of profit to the variation of the activity level rapidly increases.

Problem 3
Given the same data as for problem 1, evaluate the financial risk of company X through the financial leverage effect.
Solution:

$$\text{BEP} = \frac{\text{EBIT}}{\text{TA}} \text{x} 100 = \frac{15.790}{500.00} x100 = 0,0315 x100 = 3,15\,\%$$

There is noticed the fact that return on equity is with 3.15% lower than the average ratio of interest at financing (10%). This means that there is a poor financial risk standing and, in this case, it is necessary to immediately relinquish financial through loan and to prefer minimal sources of financing.

4. CONCLUSIONS

In this context in which financial situation is changing completely the companies are asking themselves which are the future sources of financing. The money's price had risen and the economic sectors that will suffer the most are those that have developed on banking loans.

For exemple in Romania the period in which the crisis's effects concerning the credit activity dedicated to companies were really felt by them was in the last few months of the last year. Till present time we can affirm the companies' access to credit is almost blocked because of the new restrictive conditions. From September 2008 until March 2009 the interest rate has grown, in average, with 4.50%. But for the new business is worst. The interest rate for the credits dedicated to them was around 9.50% in September 2008 and now (March 2009) has reached the level of 17%. This is just one of the new credit restrictions. We can give others examples such as:
  - the guarantee: if last year the Romanian banks gave credits without guarantees now those credits aren't in the banks' offers for their clients;
  - -the period of the companies existence: if for obtaining a credit last year a company needed to have 12 months of activity, in present the requests is for 24 months;
  - the approval of a credit: the authority for approving a credit is no longer in the branch offices of a credit institution, it was transfered to departments from the Central Branch of the credit institution.

So we can appreciate that the financial risk increased in the context of the actual crisis and as an exclusive result of the banking indebtedness. In the same time, businesses are blocked because it's hard in the present conditions to appeal for loans dedicated to business' development. With other words being difficult to obtain a credit from any bank there is no financial risk (for the companies that didn't undertake a credit till now) so the process of businesses development it is stopped, being replaced with the stagnation or even the diminishing of them, aspects that are some of the crisis's consequences.
Without the banking system it is very hard for the companies to sustain their business. A possible effect of this crisis is the enhanced prudence that will lead to the growth of the business efficiency, to a higher solidarity with a positive effect on the real side of the economic activity on its whole.

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APPROACHING THE TRUTH: ETHICS AT DISCRETION OR AS NECESSITY?

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ABSTRACT

Religious education as promoting moral, ethics and productivity may be of high necessity. The paper argues about necessity of religious instructional organizations. Empirical analysis of spiritual enhancement expressed via spiritual education, gives significant results in favor of promotion of ethical and moral values in the period of late transition in a transition economy.

Key words: Truth, Ethics, Religious beliefs, Religious organizations

1. INTRODUCTION

According to Powell (2003) the main principle of empiricism philosophical stream is that we can never comprehensively know reality or truth, because we cannot fully interpret our sense impressions even using language and concepts. The author gives an example that the sense of a real dog feeling hungry as an independent reality can be behind our sense impressions. It can be because it does not make any difference for a particular person. But all researchers agree that science approaches to the reality or objective truth (e. g. Bogun, 2008). Accumulated evidence of similar sense impressions experienced by different observers, the involuntary character of sense impressions can be considered as proofs of God's existence. Indeed, according to religious writers "common sense is right" (Trigg, 1998: 64). It is important, as the ontological approach to God begins with an individual's own ideas, meanings, experiences (Smith, 1968). Some even argue that the true religion is a personally meaningful and satisfying form of religion (Batson, Schoenrade and Ventis, 1993). However, wrong perceptions can have their entire origin stemming from shared unconscious imaginings. Despite that, ethical understanding, which is connected to felt responses to other beings, may be related to religious understanding (Wynn, 2005). "Being, the horizon of which is primordial time, can be seen to be grasped in its truth and sense, and only then can it be reinterpreted in the light of the holy or the divine or the Sacred" (Bourgeois, 1990: 125). Thus, to approach the being, one must approach the truth. It may be our human or spiritual duty to help relieve other being's suffering (Barnhart, 1997). The laws of existence are very important, because "existence is foundational to consciousness, to perception, to experiences" (Bourgeois, 1990: 60).

In the present research the main research question is: Is spiritual enhancement expressed via growth of religious education related to stages of the transition? The paper starts from theoretical background, then I develop hypothesis, discuss methodology, results and conclude with directions for future research.

2. NECESSITY OF SPIRITUAL INSTRUCTIONAL ORGANIZATIONS

2. 1. Spiritual and Ethical Well-Being

Spiritual and ethical well-beings are interrelated. According to Chatterjee (1997), the term spirituality can be defended differently including "the form and structures of the life of prayer". The author stresses that "spiritualities are ambiguous vis-à-vis rationality" (1997: 26). Religion can complement science, as the scientific processes of life are mysterious, they are beyond our understanding (Bigger, 1997). According to Wynn (2005), a new feeling can lead to a new thought, and vise versa. Outstanding sensory can be understood on the example of feelings beyond a certain sensory in the case of musical appreciation. Some researchers stress on confidence, which is defined as a person's capacity for openness, clarity and sensitivity, the nature of being (Morgan, 1997).

Terry Broderick, retired CEO, in his interview stresses that organizations are beginning to put ethics more in the forefront of their thinking (Interview by Cristine A. Henle, 2006). Ethics and values are very important components in leadership, and ethics and values should be discussed at home, in church settings, in education. However, in a lot of different places such ethical constructs as truth or trust have

different interpretations looking differently in theoretical and practical terms. That is why it is important to discuss the ethical meanings first of all.

Moberg (2006) stresses that there is a psychic struggle involving "requests or demands by others to ignore their unethical behavior" (2006: 308). As to the first kind of struggle, the author observed that often it is easier to get forgiveness than permission. The possible problem is attracting actors to join a campaign on behalf of a more ethical practice. To advance ethical actions, ethics leader must be a credible and trustworthy advocate. Broderick proposes that to create a more ethical culture, to overcome powerful forces, one must accept personal decision to be a leader (Interview by Cristine A. Henle, 2006). To overcome resistance to deep change, Quinn suggests show people that they have already been in the fundamental state of leadership, and in it they can find energy and hope. Kaiser and Kaplan (2006) argue that education can develop such skills as intrapersonal and interpersonal skills, leadership skills and business skills. According to previous studies, intrapersonal skills including regulating individual's emotions, attitudes, and motivation are the hardest to develop (Kaiser and Kaplan (2006). The world and our leaders need to know about hope, inspiration and aspiration to build a better world (An interview with Journal editors by Sandra Waddock, 2006). Broderick stresses that one cannot manipulate students' belief, with which they come, but exposing other beliefs may be ethical (Interview by Cristine A. Henle, 2006). According to Quick et al. (2000) an important feature for spiritual people is their ability to effect change for everyone. Spiritual dimension of executive health is often underinvestigated, maybe because spirituality recognizes life and its great objectives more than immediate positions.

Recognizing that ethical character is a foundation of healthy functioning influencing effective executive decision-making the authors argue that in difficult situations ethical and right decisions are especially effective in the short-run despite the possibility of immediate negative feedback. Leading organizations consider ethics as connected with current issues, and they have position of responsibility to current issues, because legitimacy of high levels of prestige attracting attention of multiple external constituents including media needs defense (Evans, Trevino and Weaver, 2006). To manage health risk consistent seeking to improve health and well-being via taking steps against identified threats must be implemented. The threats should be searched among genetic, inherited, acquired and environmental factors. Business disruptions or temporary crises, personal threats or physical attacks result from the named factors.

2. 2. Religion, Spiritual Behavior and Productivity

Religious education as promoting moral, ethics and productivity may be of high necessity. McCarthy and Puffer (2008) note that ethics of Russian managers can be formed by the Russian Orthodox Church. Powell distinguishes between perceived reality and divine reality, as he argues that "[r]ealists" believe in reality of sense impressions, while "theists" believe in their divine reality" (2003: 286). Although some social norms in religion may constrain elites, the others can reinforce the power of the elites (Bourguignon, 2005). However, it is vital to note that Roberts (2006) argues that financial gain should not be sought at all costs: "if the means of financial or performance gains include exploitation, the end is no longer valuable or "positive" (p. 299). However, in general charity can enhance economic performance, possibly via increased reputation. To rate reputation, different measures and scales can be used. For example, S&P rating system considers firms with BBB-, BBB, BBB+, and above as secure firms, while firms with BB+, BB, BB-, B+, B and B- in 18-level A-C pattern as vulnerable (Ferguson, Deephouse and Ferguson, 2000).

The important assumption is that religious people are sensitive people. But at the same time they should be strong people. For example, to liquidate poorly performing enterprises characterized by decline in productivity, particularly in returns on capital a strong monitoring within the financial system is needed (Jefferson, 1999). Kaiser and Kaplan (2006) rely on sensitivity as a mean to provoke the nonverbal experiential information-processing system through associations: "we define a sensitivity as experience that serve to protect the individual from repeating a painful injury - physical or psychological" (2006: 466). And sensitivity is very important in religion. As belief systems have a strong cognitive element and ecological content affuts motivation and learning, the work of neuro-economists, evolutionary psychologists and socio-biologists becomes more important (Dunning, 2006). Another important feature which could be found among religious people is optimism. Baron (2006) notes that optimism has been found to be positively linked to opportunity recognition and, therefore, pattern recognition based on

cognitive process was investigated in depth. According to the author pattern recognition is a process of perceiving unrelated events as constituting identifiable patterns. Based on analysis of previous research, DeTienne and Chandler's (2004) work argues that ways to identify opportunities consist of active and passive search, fortuitous discovery and creation of opportunities. Active search can be undertaken by individuals with superior search skills. The assumption for such kind of search is that there is objective opportunity, which can be clearly defined to initiate goal setting, environmental scanning, competitive analysis and strategic planning. At the same time, according to Baron (2006) recognition of specific opportunities is very important for entrepreneurs, and it is feasible for those with unique life experiences who possess the cognitive frameworks to choose a pattern among seemingly unrelated trends or events. Research findings show that people with greater experience and knowledge are more effective at identifying opportunities. That is why Baron (2006) suggests that education and training connected with learning can enhance opportunity recognition.

It is important to note that the process of solving the problems does not lead to the truth, because of conditions "[w]hen the perceived net benefits from treating symptoms are higher than from investigating the root cause" (Arend, 2003: 282). According to Arend (2003) scientific research, which looks towards the truth-seeking why, can even reconsider the causal assumptions connected with definition of the main explanatory variable. At the same time honesty is very important, as "dishonesty in an organization should virtually always lead to termination" (p. 329), because organization with remaining dishonest people is risky and the whole culture will eventually become dishonest. And Terry Broderick, retired CEO, is sure that only when companies are truthful and honest at all times, we can believe in them. However, "if you are saying one thing and acting in another way, all is lost" (Interview by C. A. Henle, 2006: 349).

People of high spirituality must be extroverts. Raja, Johns and Ntalianis (2004) argue that according to previous research extroverts are energetic, enthusiastic, assertive, ambitious, and they have significantly higher performance. They also prefer long-term psychological contracts and consider short-term contracts as restrictive. While Lu, Leung and Koch (2006) call for innovative ways to promote the sharing of tacit knowledge, individual property rights protection can actually prevent sharing of tacit knowledge, if it is considered as a source of competitive advantage.

Truly religious people are strong people. DeNisi and Pritchard (2006) developed a motivational framework of performance improvement, which is based on the assumption that individuals will allocate time and energy in ways that maximize their anticipated need satisfaction. Need satisfaction can be achieved if it is possible to rich some outcomes measured by level and the number of outcomes (rewards and punishments) and consistency across ratees and time. In this case focus on actions resulting in performance needed will be rewarded by the organization. Motivation is very important as it relates to link between desire to maximize the total need satisfaction and behavior. But the problem is that motivation is based on perceptions determining how much energy should be devoted to concrete action, while "[t]hese perceptions may or may not be accurate" (DeNisi and Pritchard, 2006: 2640). Augier (2004) argues that leaders are often described as possessing an elemental innocence, or capability for simplification, which is connected with capability to connect to the fundamentals of life. These people use honesty for inspiring and extending trust.

It is important to note that although Moberg (2006) argues that ethics leadership is promoted more by innovative cultures than execution cultures, we suppose that defending innovative rights can be impossible without execution. Previous research stress that ethical decisions require wisdom based on tacit knowledge, which cannot be taught, and which requires patience. To serve the common good, some patience may steam from wisdom among the naive. I argue that the most difficult thing is to become a wise person, because individual wisdom is "a composite of curiosity, a willingness to learn, and an openness to learn new things about one's environment" (Brown and Starkey, 2000: 113). Acquiring wisdom requires leadership skills. In Interview by J. Anding (2005) Robert Quinn stated that to be abnormal, the fundamental state of leadership must move toward excellence, which is positive deviance, and which is exceptional and not an imitation. Usually normal people send implicit messages that extraordinary people should stop being excellent because normal people capture the part and not the whole.

Following previous research, Luo argues that "opportunism, if it occurs, can lead to loss of an individual's social face, which may lead to the loss of exchange opportunities with all members of that individual's network or even with the overall society" (2006: 140). To reduce weak form opportunism and increase willingness to cooperate procedural justice as fair decision-making process including correctable and ethical procedures and criteria, and distributive justice as distribution of rewards according to corresponding efforts are needed. Justice is needed for objective evaluation and actions toward other people based on facts of others' character and achievements given holding the full context (Locke, 2006). The basis of social exchange logic is contingency of voluntary actions upon rewarding reactions from others.

3. PERIODS OF STUDY

Svitkova (2006) argues that corporate charity is different for transition economies and developed economies. The main argument is that economic performance and corporate social responsibility are important factors influencing corporate charity. Other factors mentioned are short history and existence of nonprofit organizations, because of perception of nonprofit organizations as inefficient and unprofessional. That is why I distinguish between early transition and late transition, which is closer to the state of developed economies. As in developed countries economic performance is higher, I expect enhanced charity including creation of new spiritual instructional organizations. It is worth noting that some authors suggest the subordination of ethics to performaturity, because otherwise self-esteem and motivation of employees suffers, and they worry about future layoffs (McKinley, Zhao and Rust, 2000). But, I suppose that religious organizations relieving pain can educate people to cope with stress. Overall,

Hypothesis. The share of spiritual instructional organizations will be more for late transition than for earlier transition in transition economies.

4. METHODOLOGY

4.1. Data
The data on the total number of religious organizations including spiritual instructional organizations registered from 1994 through 2007 were derived from Statistical Yearbooks of Ukraine, 1999, 2000, and 2008. The data were divided on two groups, early transition (1994-1999) and late transition (2000-2007).
4.2. Method
The method used is ANOVA statistical model (Neter et al., 1996) to test differences in means of shares of spiritual instructional organizations. F-statistic was computed to conclude about a relation between the type of transition and prevailing share of spiritual institutional organizations.
4.3. Measure
The measure used in this study is a share of spiritual instructional organizations in the total number of religious organizations registered in Ukraine. At the end of 2007 there were the following shares of registered religious organizations among the religious organizations: orthodox - 53%, catholic - 15%, protestant - 28%, judaism - 1%, muslim -2%.

5. RESULTS AND DISCUSSION

Results of ANOVA-analysis are shown in the Table.

TABLE
Results of ANOVA Analysis of Share of Spiritual Instructional Organizations, 1994-2006

Number of years		Mean, %	F-statistic
Earlier transition	6	0,36	
Late transition	8	0,57	
		0,48	93,7**

** p < .01

F test confirms that the share of spiritual instructional organizations in the total number of religious organizations, 1994-2007, is not the same for periods of early and late transitions. Specifically, on 1%

level of significance results show that share of spiritual instructional organizations is significantly more for late period than for early period, which does not reject developed hypothesis.

6. FUTURE RESEARCH DIRECTIONS

Giacalone and Thompson (2006) note that ethical outcomes are undervalued in organizational life and, therefore, ethical decisions are costly. That is why the authors distinguish a sham ethics, when intent to do the right thing is realized only when it helps the decision maker or advances the profit expectations. The authors highlighted new field of inquiry in the contemporary business, social impact management, which is opposed to ethics, and which reflects the intersection of business needs and wider societal concerns with the aim of mutual benefit of both. To solve these problems strong moral compass of a student is not enough, because to act on values deep skills in foresight, creative problem solving, leadership and deep listening and negotiation skills, and an understanding of the social context are needed. As managers must create an ethical climate to prevent dishonest behaviors performed by normally honest employees (Litzky et al., 2006), important task for researcher may be connected with establishing explicit links between unethical behavior and its consequences. One very interesting topic for future research may investigate both positive financial performance and positive societal returns that ethical business creates.

Cameron (2006) argues that in conditions of ambiguity and chaos people decide what is real and what is appropriate. The author considers rules and standards that lead to doing good versus the same rules and standards that avoid harm. For example, environmental pollution standards specified in contracts in fact can give the opposite of the intended outcome, if behavior leads to destroying normal organizational functioning, because ethics rules do not serve an adequate fixed point. At the same degree, rules specifying duty to avoid harm may be inadequate standards. Future research may investigate these issues in depth.

7. CONCLUSIONS

God is all, and all else is nothing, according to traditional Judaism (Saldarini, 2001). However, scientists agree that a profound psychological temptation in human behavior exists (Kurtz, 1997). "It is, or at least it should be, impossible to study spirituality without also having to study the persons whose spirituality it is" (Fisher, 1997: 196). It is important, as spirituality in religious studies deals with what really matters (Morgan, 1997). Bigger (1997) notes that the principles of justice, fairness, and uprightness aimed at underpinning a legal system are the same for all ethical religious systems and Judea-Christian principles.

Spiritual and ethical behaviors are interrelated and connected to higher productivity. Perhaps it is a reason that Evans, Trevino and Weaver (2006) found that higher prestige American MBA programs devoted more attention to ethics in the curriculum than lower prestige MBA programs. The pressure of rising public concern about the ethics of business creates need of maintaining the school's reputation. I argue that spiritual instructional organizations can promote ethical and moral values, which lead to increasing individual productivity. Empirical study indicates that the share of spiritual instructional organizations is more for late transition than for earlier transition. Concomitant examples provide evidence from the region giving very important insights for managers as members of collectivist-large power distance-strong uncertainty avoidance cultural type, which can characterize transition economies. Predictions in social science are limited to time and place, thus, consideration of the new setting of transition is important to broaden the sphere of explained states or events (Hunt, 1991).

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WHAT MAKES WORK SACRED?

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ABSTRACT

This paper considers factors that make work sacred. After presenting the arguments underlining why this subject is necessary, the definitions of the two concepts at the heart of the paper are produced. We then consider two important aspects that characterize sacred work: experienced meaningfulness and transcendence. When possible, these aspects of sacred work are related to concepts in the business literature. A presentation of other characteristics of sacral work is presented in the final section of the paper.

Keywords: *Work Meaningfulness; Work Transcendence; Employee Engagement; Organizational Commitment; Organizational Citizenship*

 "Your work is to discover your work and, then with all your heart to give yourself to it."
- Buddha

1. INTRODUCTION

Work is what the majority of people engage in for most of their lives. Despite this, there is a noticeable lack of theological reflection on the subject of work and the sacred. The situation has been somewhat remedied during the past decade or so, though in a sporadic fashion, as management theory and practice begin to embrace the topic of spirituality in the workplace, and as empirical studies on the topic are conducted in order to help organizations and people discover ways to improve the human experience at work. However, the disconnection between work and spirituality still remains a widely accepted mental model in the workplace. The ways individuals earn a living may even sometimes seem hostile to their faith and relevant only to fragments of their whole selves. This can produce negative results as people often speak of a sense of apathy and helplessness about their work.

This paper considers some factors that make work sacred. After presenting the arguments underlining why this subject is necessary, the definitions of the two concepts at the heart of the paper are produced. We then consider two important aspects that characterize sacred work: experienced meaningfulness and transcendence. When possible, these aspects of sacred work are related to concepts in the business literature. A presentation of other characteristics of sacral work is presented in the final section of the paper.

1.1 Why Is This Subject Necessary?

There are at least five good reasons why someone would want to know what makes work sacred. First, a better integration of the sacred with one's work may introduce many of the strengths of faith into the work environment. Values such as honesty, loyalty and charity are examples of virtues that spirituality seeks to cultivate and that many organizational environments sorely lack. Second, those who are underinvested in their work need something that will motivate them to apply themselves to that for which they are being remunerated. Understanding that work is sacred could make them more diligent in their work. Third, people who are overinvested in their work may need something to put this part of their life in perspective and prevent occupational diseases that can even lead to death-by-overwork. This phenomenon is also known as "*karōsh*" (Babbar and Aspelin, 1998). Fourth, the inability to see the sacred meaning of work reduces it to secularity and immanence. To leave this important part of life disconnected with the sacred diminishes spiritual growth, especially for those who consider themselves to be religious or spiritual. Finally, attaching a sacral meaning to work may provide alternate standards of success and failure in the workplace for the dissatisfied, the bored, the restless, and for those who suffer from the psychological bondage that people sometimes find in work situations.

1.2 Definitions

"Work":

Work can simply mean to be "the productive activity people do". (Haughey, 1989). Although this productive activity can be salaried or unsalaried, what is written about work in this paper will be with reference to salaried work because this is the area that is most infrequently related to the sacred. With this position in mind, we have adopted The following definition of work: *an inherently value-laden human activity having a formative effect on 1-the person performing the work through formation and remuneration and 2- the object it is directed toward through process and product* (Naughton, 1992).

"Sacred":

The sacred is an experience, not an idea. According to leading authorities on the subject, the sacred is the manifestation of something from the beyond or from another dimension (Twiss and Consner, 1992; Eliade, 1959). Despite this transcendent quality, the sacred also has had an immanent side. The sacred manifests itself (what Eliade calls a "hierophany") in the form of a terrible power (e.g., hidden forces of nature, irrational aspects of religion, fear of the unknown), and is explained or understood as being *a tremendous and fascinating mystery that can be both frightening and intoxicating.* Experiencing the sacred brings people in closer proximity to the wholly other (transcendental aspect) and the Living God (immanent aspect). Although these experiences can be conditioned by our world views and traditions, they can, at the same time, modify our world view and change our traditions. The sacred can also speak to us in our daily lives. It is therefore a concept that can be quite relevant to salaried work, which is precisely at what, and where, most people spend the majority of their waking hours.

2. ASPECTS OF SACRED WORK

In this section, we argue that work which is meaningful and transcendent constitutes sacral work. Other characteristics of sacred work are then presented.

2.1 Experienced Meaningfulness:

Work can be mundane, yet it is all-encompassing. People will often work all day and then think about work during non-working hours. They also often identify and define themselves by their work. Yet, only a few will stop to reflect on the meaning of their work. The extent to which individuals immerse themselves into their work roles in this fashion is known as *employee engagement* (Hartner, Schmidt and Hayes, 2002). Engaged workers employ and express themselves physically, cognitively and emotionally during their role performances. Conversely, when a worker is disengaged, they withdraw themselves from their role. One study found that businesses with highly engaged employees had positive outcomes such as profitability, productivity, customer satisfaction, and lower turnover (Kinjerski and Skrypnek, 2008).

According to Haughey (1989), sacred work is work that is closely tied to its overall meaning. Drawing from a study conducted on work motivation with a sample of over thirty-eight hundred employees, he invokes the concept of "affections" to pinpoint the source from which flows all work behavior. These affections are usually stirred up by objects and situations at work and are grouped into seven categories: survival, relatedness, pleasure, information, mastery, play, and dignity. If employees' affections are incited for something work-related, enormous energy for the organization can result. Despite this, Haughey (1998) contends that employers often ignore their employees' affections. If there is no affectivity elicited, the employer should not be surprised that workers are simply putting in their time, going through the motions, and punching the clock. For this author, "no affection for" translates into "it has no meaning for me" or "it is a meaningless job". Even if a job is valued objectively (e.g., teaching, nursing) there is no guarantee that something workers see as objectively valuable will also incite their affections. Meaningful work is therefore work which invokes the affections of the workers.

In the management literature, the notion of "affections" is closely associated to the concept of "organizational commitment". Organizational commitment is a psychological stabilizing or obliging force that binds individuals to behaviors relevant to the organization (Bentein and al., 2005). Initially conceptualized as a unidimensional construct, organizational commitment is now known to be multidimensional in nature. The most common forms of organizational commitment are affective commitment, continuance commitment, and normative commitment (Meyer and Allen, 2007). Affective commitment, which is related to Haughey's idea of "affections", is based on identification and involvement with an organization. Employees who manifest high levels of affective organizational commitment closely identify with the goals of their organization and will manifest great effort on its behalf. On the other hand, continuance commitment is based on the costs that would be incurred in leaving an organization. Finally, normative commitment is based on a feeling of obligation to an organization. Of the three types of commitment, affective commitment is more likely to reflect primary feelings and attitudes toward work.

Other classic work motivation theories currently being taught in business schools and management courses, such as Abraham Maslow's hierarchy of needs, are too settled on their view of what fuels workers and gives work meaning. Partial theories have been used for many years to explain job motivation and hold that money, status, power and psychological gratification motivate workers. Fortunately, other theoretical models address the topic of the experienced meaningfulness of work. The Job Characteristics Model is a very influential model which attempts to address how three job characteristics (skill variety, task significance, and task identity) can stimulate the meaningfulness of work (which is referred to as a "psychological state") and lead to specific related outcomes in the work environment such as increased job satisfaction, intrinsic motivation, reduced intention to quit, low absenteeism, and high job performance (Hackman and Oldham, 1975). According to this model, if workers feel they are fully utilizing a variety of their skills (skill variety), their job affects many people to great extents (task significance), and they are allowed to complete the task from beginning to end (task identity), it is likely to excite their affections and they will perceive their work as meaningful.

2.1 Transcendence:

Dale (1991) addresses how people can find fulfillment in their daily working lives. According to this author, there is some 'larger' spiritual activity, which goes beyond the nature of work itself, stirring in people while they are working. He writes of the 'inner work' of individuals in the midst of their daily work and is concerned with understanding how individuals who struggle with the consequences of different types and situations of work can find purpose in their working lives and overcome the constant presence of these barriers by gaining a transcendent understanding of their work. Indeed, it is ironic that the implications people assign to their work are immanently achieved and immanently understood. Immanent signifies that the assigned meaning of work is profane, its horizon is confined to the narrow world of the here and now, and its explanation is derived from the workers' immediate sphere of reality. However, work can also have transcendent aspects to it. According to Haughey, the transcendent meaning of work can arise in two ways. The first way for work to have transcendent meaning develops when workers take on agendas that transcend their personal benefits and satisfactions in doing the work. In other words, when workers go beyond the tasks enumerated in their job descriptions or assume responsibilities related to but exceeding their assigned work, they find transcendency in their work. This way of developing transcendence in work is closely associated to what is recognized as "organizational citizenship behaviors" in the business literature. This concept is defined as individual work behaviors that are specifically directed at helping people or the organization. The behaviors are discretionary and a matter of personal choice. They are not recognized by any formal reward system and their omission is not punishable. Examples of organizational citizenship behaviors include altruism, courtesy, civic virtue, conscientiousness, and sportsmanship. In a study conducted on the topic of spirituality in an individualistically-driven workplace environment, participants were asked what their personal perceptions about spiritual behavior at work. The top three responses included the organizational citizenship behaviors of displaying a readiness to cover for colleagues (reciprocity), putting in extra hours when needed, and showing support for positive initiatives from the organization or its members toward the local community (Marques, 2008).

A second way to find transcendence in work develops when individuals are able to connect it to their faith. If a job is not connected with the religious faith one adheres to, work becomes segregated from a major

source of its potential purpose. The work's purpose, therefore, will be merely immanent. Such confinement is unnecessary and serves neither the employer, nor the worker, nor those served by the work done. People of religious faith can not be satisfied with merely immanent meanings in their work if they are trying to live their faith. Scriptural themes (or categories of faith) can give transcendence to everyday work. Vest defines three basic Benedictine principles about sacred work, which are enfolded in the context of prayer and scriptural themes (Vest, 1997). The first principle is that of vocation, which refers to being called to do what we do. Vocation is from the Latin word vocare, to call. The call refers to seeing work as an extension to a response to a higher call to understand life's purpose. Work that comes as a result of the call is the highest and most sacred expression of the soul. In its action, it is the most practical and useful and is for the highest good of all (Hayakawa, 2005). The second Benedictine principle refers to stewardship, which means taking care of what is given. The workers understand that what they have, they have in trust, and their work is a service to a transcendent being and its purposes. The third scriptural theme of Benedict's rule is obedience. Serving one another is perceived as an imitation of Christ, who characterized himself as not being called to be served, but to serve. Other examples of scriptural themes that can be tied to work include Co-Creators (the worker sees the materials worked with in terms of their source, the Creator, and sees the tasks to be done as a matter of picking up where the Creator leaves off), and the Curse (the drudgery, monotony, or ordeals experienced at work can be traced to the original Fall whereby they take on a broader purpose). Although Vest posits that these themes can be applied to modern expectations and experiences of work, Dale argues that a spirituality of work need not necessarily be monastic, in that it is not set-apart, nor is it quiet or silent. Yet, he contends that it can draw much from the monastics, as they have long reflected on the role of work within spiritual pursuits and the spiritual community. Their spirituality seeks to instill an attitude of quietness within the worker in spite of the noise and activity in the environment. The Benedictine way continues to intrigue people as they attempt to see their daily work as sacred. In this sense, the monastic way of life (intentional community supported by a regular rhythm of prayer) could teach us something about work itself. Perhaps society can learn from the monastic way of life by applying their principles to other settings as much as is possible for people fully engaged in the complexities of modern living. A monastic-type of spirituality of work could therefore help ordinary people understand how their work can become transcendent and better integrated into their life and faith.

2.3 Other Characteristics of Sacred Work:

We have outlined in the previous two sections of this paper how sacral work is meaningful and transcendent. These are a good starting point in understanding what makes work sacred but there may be more to the answer than these two aspects. A "spirituality of work" has other characteristics (Haughhey, 1989). First is that the work be personally composed (i.e. done by the worker, not for the worker). Second, it needs to be experienced based. A third characteristic is that the work would have to be developed with the help of publicly available documents such as the stated vision and mission statements of the employing organization, its code of ethics or that of an industry or a profession, as well as religious Scriptures and doctrines (e.g, Pope John Paul II's "On Human Work" is often referred to in the literature). Fourth, it must be social. People usually work with other people to whom their spirituality should be communicated. Their ability to articulate their spirituality of work and interpret it argues to its objectivity and its capability to be understood and comprehended by themselves and by others. A fifth characteristic of spiritual work is that it must be critical of an organization's ideology (e.g. organizational culture, distribution of power). In the absence of critical thinking, a naïve interpretation would use religion, for example, to justify any given situation. Sixth, a spirituality of work must be flexible. Because the realities and particularities of work are constantly changing, new situations presented within one's work require regular re-envisioning of one's spirituality. Finally, a spirituality of work must be theological (about the Creator's interest in relation to the work) as opposed to being merely sociological and philosophical. There is a distance here between academic theology and practice as some consultants on spirituality in the workplace make it a point to adopt a definition of spirituality that has no religious component. They prefer to define spirituality as a matter of expressing more humanity in the workplace by abiding to an assortment of "principles" such as creativity, communication, respect, vision, partnership, energy and flexibility (The Institute for Management Excellence, 2008).

3. CONCLUSION

Envisioning work, an essential part of life, as a sacral task should not be such a difficult thing to do. By definition, work is formative to the person and the object it is directed toward. The mere description of work therefore establishes its moral and spiritual importance. In this paper, we have argued that sacred work has a self-determining effect on the subject through meaningfulness, transcendence and an array of other characteristics. In contrast, secular work values solely the changes in the object at the exclusion of the changes in the subject who produces it. Its impact is therefore solely limited to the realm of the here and now. Anyone who has worked can attest that secular work often denigrates human dignity by corrupting and compromising through situations such as discrimination, poor working conditions, obsession with the bottom-line, fraud, sexual harassment, etc. Adherence to the principles presented in this paper may help workers and employers alike avoid these pitfalls.

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PROPOSAL FOR A NEW STRATEGIC SOURCING METHODOLOGY IN ORGANIZATIONS

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ABSTRACT

To satisfy the demand for service on behalf of suppliers and customers, one of the priorities of companies at a world-wide level is to obtain the best products, at the best prices and with the greatest quality features, therefore creating added value and competitive advantages in the entire value chain. For the past few years, the function of supply has evolved remarkably from a merely economic approach to being seen as a strategic approach.
In this study, a new strategic sourcing methodology in organizations is presented, carrying out a comparative analysis of different existing methodologies in literature which are currently most applied in industry.
The proposed methodology is important since it encases the main strengths of the methodologies studied, taking into consideration in the process of the search for suppliers the institutional philosophy and values, as well as an analysis of the market and political and economical conditions of the region in which the industry is located. It also gives feedback on the consumers' opinions as a basic axis of companies today.

Key Words: *Strategic sourcing, supplier selection, sourcing methodologies, supply chain management.*

1. INTRODUCTION

In the globalized world we live in today, it is more common to deal with strategic topics that help businesses to be more efficient and reduce costs. One of the priorities of companies at a world-wide level is to obtain the best products, at the best price and with the best quality features to be able to offer added value and competitive advantages in the entire value chain. Lately, the task of sourcing has evolved notably from a past, purely economic approach, to being seen as a strategic approach.

Within this context, it is important to mention that when we buy any product, it is very sure that more than 60% of its price is attributable to the raw material cost. This means that the raw material buying process that makes it up represents the greatest influence on a product's total cost. (Piedras, 2007)

Optimizing the sourcing cycle binds the companies to take initiatives associated to the establishment of programs that mainly involve transformations on its processes, technology and organization. This means that the companies, depending on the level of maturity of their supply chain, should align their sourcing process to what they expect in short and long term as a business. Due to their nature and the potential benefits of their implementation, sourcing programs are subject to and adopted in any type of industry, being particularly relevant in those that support their success on the power and effectiveness of the purchase, as is the case of retail and consume. This information does not exclude any other type of industry, even those in which a product is not produced or sold; strategic sourcing focused on services may be adopted.

In this study, a new strategic sourcing methodology in organizations is presented, carrying out a comparative analysis of different methodologies that exist in literature and that are most applied in the industry currently.

2. LITERATURE REVIEW

Reviewing the literature, some basic methodologies are presented which define the purchase model from an operational approach; that is, as the organizations saw sourcing operations years ago. Arnold and Chapman (2004) describe the purchase cycle as follows:

1. **Receive and analyze purchase requisitions.** The requisition form should contain requester's name and signature and authorization, expense charge account, quantity and raw material description, measurement unit/service requested, place and date of requisitioned delivery, additional information.
2. **Select suppliers.** Search for potential suppliers, sending requests for estimates, receiving and analyzing estimates to choose proper supplier.
3. **Determination of correct price.** The purchasing area is responsible for the negotiation and application of the correct price. This is the main stage of the cycle and in which the purchase decision is made.
4. **Placement of the purchase order.** The purchase order is the legal formality of the purchase.
5. **Follow-up to assure on-time delivery of the raw material requested.** The supplier is responsible for on-time delivery. If there are supply problems, the purchase area is responsible for the action plan to mitigate the risk. Among the actions are to search for alternative sourcing sources, to work with suppliers to solve problems or to re-schedule production.
6. **Receive and accept the raw material purchased.** Upon receipt, inspect the raw materials to match with the requisition in features, quantity and that they have not been damaged in transit.
7. **Approval of the supplier invoice for its payment.** Make sure the purchase order, the receipt report (remission) and the invoice match.

Under this cycle there are some deficiencies in the purchase that will have a medium-term impact on the value chain. An integral analysis of the purchase, understanding the market environment is not stated, the industry of the product purchased is not studied and the mission and values of the organization are not considered. It runs the risk of considering the price as the most important element of the purchase, leaving aside quality of the raw material or service acquired or even the assessment of delivery time, guarantees, post-sale services, return policies, discounts, among others.

On the other hand, from a strategic point of view, there are methodologies used today in the industry that take into account other aspects and activities that help companies to make their sourcing decisions.

Department of Defense (2001) describes the following strategic sourcing methodology:

1. **Collect information.** If the potential customers still do not have a relationship established with the sales/marketing areas of suppliers and their needs, it is necessary to look for suppliers who satisfy those requirements.
2. **Contact with the supplier.** Use communication formats such as RFG: estimate request, RFP: proposal request, RFI: request for information, RFT: bidding proposal request.
3. **Review of the background information.** Raw material type, quality references are consulted, as well as follow-up requirements, such as installation, maintenance and guarantees are researched. Raw material samples are examined or tested.
4. **Negotiation.** Negotiations are carried out considering the price, availability and commercial condition established. Delivery times are negotiated and contracts are filled in.
5. **Execution.** Preparation of the supplier, shipments, deliveries and payments to suppliers are completed based on the contract terms. The installation and possibly training are already included.
6. **Use, maintenance and availability.** During this stage, the company assesses the performance of the raw materials and requests support.
7. **Renovation.** When the raw materials have been used, the contract is expired or when the raw materials are re-ordered, the company assesses, according to the indicators, the same supply source or looks for others.

This methodology presents valuable activities that complement in a very important way the common sourcing cycle. The contact with the supplier stands out; the communication and feedback necessary to obtain and assess information are obtained. In activity number 3, product samples are examined and the materials and services are tested. With this, additional strategies besides those mentioned in the process with selection merely based on price are achieved. Another activity to point out is that in step 6, product performance is assessed. With this, raw material assessment and feedback can be obtained, considering

the opinion of the final consumer. This evaluative part will significantly represent improvements in the raw materials purchased. Besides the fact that performance measurement parameters, improvement statistics, corrective action follow-up, as well as others, may be established.

Nishiguchi (1994) presents other strategic sourcing methodology. He defines it as a process that continuously improves and reassesses the company's activities in the purchasing area. Also comments that it is a very important component in the supply chain management. He proposes the following steps:

1. Assessment of the company's current expenses. What is it and where is currently bought it?
2. Assessment of the supply market. Who and what do they offer?
3. Identification of the proper suppliers.
4. Negotiation with suppliers the raw material prices.
5. Implementation of a new sourcing structure.
6. Follow-up of results and reassessment (continuous circle)

This methodology, in its initial phase, is very interesting. It analyzes the budget and expenses that are being carried out in the category studied and tries to see strategic sourcing as an orderly, systematic and continuous process. In the second step, an assessment of the supply market is mentioned, analyzing who the suppliers are and what each one of them offers. This methodology lacks assessment of the samples and the suppliers. It does not mention the use of the raw material acquired and therefore, does not obtain feedback from the final consumer, considering the performance of the supplier and the sourcing process as such as a good indicator.

The Chartered Institute of Purchasing and Supply Company (2008) present an integral sourcing methodology with a strategic point of view. In the initial study stage of the vision, mission and values of the organization, external factors and impacts that influence in an organization are tackled.

To mention a few, we have:
1. Economic environment.
2. Changes in technology.
3. Social environment (tendency to take care of the environment)
4. Political environment.
5. Legislation and regulations.
6. Competitive environment.

Once these factors have been analyzed, the mission, vision and values of the organization are considered, focusing on human and financial resources, knowledge, experience, relationships and reputation, as well as technology and information management. In the following phase, the criteria of the company's functional areas are considered in order to focus the sourcing strategy to the organizational objectives and goals. In the sourcing process, first the purchase budget is identified to later analyze the expense of the category studied considering the past and future expense. The third activity will be a policy analysis considering international relations, analysis of local policies and regulatory effects. In the following step, the supply base is analyzed, studying the market and identifying the potential suppliers. In the next activity, a mapping of the current supply activities is shown to assess improvement. Finally, through an analysis of Porter's 5 strengths and a SOWT analysis (strengths, opportunities, weaknesses and threats) a purchasing strategy of the category studied is established.

Another strategic sourcing methodology is presented by Douglas et al. (2002) in which, through 5 phases, the selection, development and management of the relationships in the purchasing area is presented, from a preliminary phase establishing the purchasing needs, to an identification of potential suppliers in its second phase and following with the selection of suppliers through a business assessment.
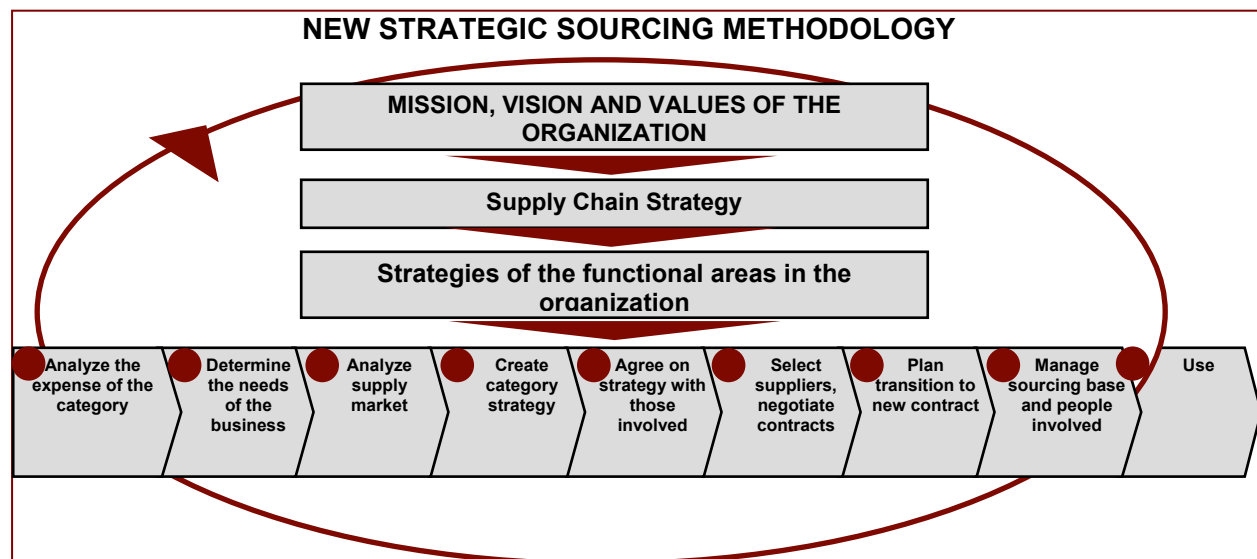
This methodology presents some differences in its process since it omits an analysis of the market expense and sample assessment. Its approach is practical and with greater attention in the business relationship with the suppliers.

A.T. Kearney Company (2003) proposes a very complete methodology made up of 8 steps of strategic sourcing and with application in several categories. This systematic process includes some activities have studied in the previous methodologies. It begins with an analysis of the expense or budget, followed by detection of the business' needs, carries out an exhaustive analysis of the industry of the category studied, develops a strategy according to an analysis of the purchase's power of the category, informs the strategy to the team, selects the suppliers, negotiates contracts, plans the transition to the new contract, and finally, handles contract management. In this process, it leaves to one side the strategic part of the organization studied; to carry out the sourcing process, it does not focus on the mission, vision and values of the organization and, with this; it may run the risk of not complying with the ideals or programs on which the organization should be focused. It also does not consider assessments of the end consumers, which are considered an axis of the organizations today.

3. THE METHODOLOGY PROPOSED

The main objective of any business is to create value for the stockholders. Many managers acknowledge that this may be carried out successfully if customer service is the focus. Traditionally, the purchasing area has been separated from the end customers or users. However, the reception of high quality, on-time deliveries of raw materials with a reasonable cost directly affects in customer satisfaction. An organization can not supply its final customers high quality products if its suppliers have problems with the deliveries or with quality in the raw material delivered; increasing with its associated costs that affect the acquired products (Oberoi and Khamba, 2005).

It is very important that the buyers understand the needs of the organization and its customers. This understanding will cause it to make correct decisions according to the needs of the organization (Sandholm, 2006). For this reason, a new strategic sourcing methodology has been developed, considering the activities and processes of the methodologies studied. In this proposal, go from an analysis of the corporate mission, vision and values of the organization studied and apply an orderly and systematic sourcing process. With this sourcing proposal, we try to see the supply with a business vision, with defined objectives and which is carried out according to the corporate values and profile. An expense analysis and a complete study of the mentioned industry are also taken in consideration.

NEW STRATEGIC SOURCING METHODOLOGY

MISSION, VISION AND VALUES OF THE ORGANIZATION

Supply Chain Strategy

Strategies of the functional areas in the organization

| Analyze the expense of the category | Determine the needs of the business | Analyze supply market | Create category strategy | Agree on strategy with those involved | Select suppliers, negotiate contracts | Plan transition to new contract | Manage sourcing base and people involved | Use |

This proposal of methodology may be applied in an organization and validate its operation. The corporate values are considered an axis for the success of its implementation and dissemination within the system. At the same time, it is means to consolidate the purchasing or sourcing operations with a solid, structured, systematic and dynamic process.

3. CONCLUSIONS

Starting up a strategic sourcing program is a big decision and represents a risk for most managers and directors of the operations area, since the development of this concept in our country (Mexico) has not yet matured, together with failed efforts of starting a similar program or model with disappointing results and, in some cases, with catastrophic shortage of supplies. However, at present, the service demand from suppliers and clients makes strategic sourcing not only a concept, but rather a need which is imperative in the survival of suppliers and clients. The sourcing programs are successful as long as there is a clear awareness by those who will start them up. Some points that should be taken into consideration will be the following: assess the feasibility of the implementation of each initiative, support each decision with greater depth than a cost-benefit analysis, identify its current situation in the matter of organization, technology and risks and prioritize initiatives. The methodology proposed will be validated in a practical case of a mass consumer business and significant economical savings should be seen in the results, as well as considerable improvement in the value chain.

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THE EFFECTS OF DEMAND UNCERTAINTY ON CHANNEL STRUCTURE

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ABSTRACT

Motivated by the observation that some manufacturers open their own retail stores despite the existence of more efficient independent retailers, this paper examines the duopoly manufacturers' choices of product distribution channels under demand uncertainty and resale price maintenance. We characterize the conditions for the equilibrium channel structures. We find that (1) manufacturers tend to distribute products with more design attributes through their own retail stores, (2) manufacturers with highly substitutable products are more likely to use independent retailers, and (3) at least one manufacturer has more incentive to open its own retail stores when facing an increase of the market size asymmetry.

Keywords: Demand Uncertainty, Channel Structure

1. INTRODUCTION

Many products, such as tires, books, and grocery items, are sold only through independent retailers, who may also carry competing products. Other products may be distributed through both independent retailers and at manufacturer's retail stores. For instance, Apple sells its iMacs and iPods through authorized retailers, such as Sears, Best Buy and CompUSA. It also starts to open Apple stores since 2001. Similarly, one can buy Krispy Kreme Doughnuts from supermarkets or from its own stores. Fashion products, for example designer clothes and handbags, are available at both major department stores and designers' flagship stores. Notice that in each of the above examples, although products may be sold through different retailing channels and by different retailers, the retail price is kept the same across various stores.

When comparing independent retailers with manufacturer's retail stores as a distribution channel, the marketing literature suggests that independent retailers are used primarily due to "their superior efficiency in making goods widely available and accessible to target markets" (Kotler 1980, p. 417). Superior efficiency well explains the widespread presence of independent retail stores. However, it also raises the question as to why a manufacturer, like Apple or Krispy Kreme Doughnuts, would also choose to sell its products through its own stores, especially when their retail stores cannot operate as efficiently as independent retailers.

In this study, we answer the above question from the angle of information value on market demand that the manufacturer's retail stores provide, which has not been explored in the literature. In other words, manufacturers open retail stores to directly access the market demand information at a consumer level. Take designer clothes as an example. Fashion buyers, a key component in fashion retailing, determine what to order from a designer's collection. Such orders certainly convey the information about market demand to the designer. However, it only reflects fashion buyers' estimates about fashion trends and is indirect. The information on whether a specific piece, style or color in the order runs out fast or remains unsold until Christmas is unavailable to the designer. Such information is valuable, especially for products with complicated design attributes. When manufacturers learn more about consumers' preferences, they are able to forecast market demand more precisely. Therefore, a manufacturer's retail store that offers direct interaction with consumers provides more precise information on the demand to the designer/manufacturer.

We model the value of more precise information on market demand in a similar fashion as in Rey and Tirole (1986): it resolves the demand uncertainty faced by manufacturers, and helps them gain deeper insights into consumer preferences and better monitoring of sales and returns of their products. An analytic model is

employed to examine the countering effects between the value of resolving demand uncertainty by manufacturer's retail store and its retailing cost inefficiency. Following the literature, we refer to the use of independent retailers as the indirect channel, and to the use of both independent retailers and the manufacturer's retail stores as the dual channel.

We analyze the equilibrium conditions for different channel structures under demand uncertainty. The key interest of this study is to explore the impact of different market conditions on manufacturers' decisions in opening their own retail stores. For example, in a market with high (low) demand uncertainty, which manufacturer has more incentive to open retail stores, the market leader or the smaller player? In a market with high (low) product substitutability, which channel structure is more likely to be sustained?

We first provide a clear taxonomy of the equilibrium range in the cost inefficiency space. We show that dual channel is the dominant strategy when facing high enough demand uncertainty. It suggests that manufactures of products with more design attributes are most likely to be better off opening their own stores. With less demand uncertainty, each of the four possible channel structures could be an equilibrium depending on the cost inefficiencies. Multiple equilibria may also arise.

We also find that for close substitutes, manufacturers are more likely to be better off selling through the indirect channel. The rationale is that demand uncertainty softens the extent of head-to-head competition between close substitutes. High product substitution helps us explain why most commodities and necessities, such as eggs, vegetables, diapers, etc., are typically sold through the indirect channel only. On the other hand, products with more design attributes face more demand uncertainty and may choose to sell through manufacturer's retail stores.

Market share will affect equilibrium channel structures. We find that the equilibrium structure that both manufacturers employ indirect channels is less sustainable in markets with increasingly asymmetric market sizes. More specifically, our theory predicts larger players in the industries with high demand uncertainty are more likely to open their own stores. Moreover, in markets with a very low or high demand uncertainty, the asymmetric equilibrium channel structures, where manufacturers employs different channel structure, may arise when the market shares become more asymmetric.

This paper complements the existing studies on direct channel. Some earlier studies show that the direct channel gives manufacturers full control over how products are marketed, especially in cases in which, for example, specialized knowledge and better brand information are needed (Williamson 1981, Anderson 1985). As a result, when manufacturers open their own retail stores, the number of units sold increases. This paper also briefly analyzes this demand-enhancing effect due to the manufacturer's retail stores. We demonstrate through numerical examples that our theoretical results hold qualitatively when the demand-enhancing effect is considered. Other perspectives suggest that the integrated channel provides the benefit of strategic control over the prices charged by the indirect channel (Chiang 2003), which we review in greater detail in the literature section.

The existing channel structure literature, discussed in more details in the literature section, typically assumes that manufacturers have perfect knowledge with respect to demand. We believe that such an assumption is restrictive as manufacturers do not access the retail market directly when selling through indirect channels. Issues such as transaction costs, communication problems and incentive conflicts among channel members will discourage retailers from sharing the market demand information with manufacturers.

Resale Price Maintenance (RPM) is imposed to reflect the real business practices and to facilitate analysis. By imposing RPM in our model, the trade-off between the value of information gathering by the manufacturer's own retail store and its retailing cost inefficiency can be isolated from the channel inefficiency associated with double-marginalization. It also enables us to study the competition softening effect from demand uncertainty.

In short, this study adds to the existing literature on channel structure by exploring how demand uncertainty affects equilibrium distribution channel structure for horizontally differentiated products, and how the

changes in market conditions affect the equilibrium channel structure. The rest of the paper proceeds as follows. We review the related literature in Section *II*. In Section *III*, we lay out the model and characterize the equilibrium. Section *IV* studies the stability of equilibrium channel structures when market conditions change, both theoretically and numerically. Section V concludes.

2. RELATED LITERATURE

One line of literature examines the conditions that determine the equilibrium channel structure. Williamson (1981) proposes that firms can better monitor and motivate their own distribution agents. Hence, when task-specialized knowledge and relationships are important, integrated channels are used. Choi (1991) examines the impacts of the demand function and the power structure on equilibrium channel structure when competing manufacturers sell through a common retailer. Equilibrium profits and prices for Manufacturer-Stackelberg, Vertical-Nash, and Retailer-Stackelberg games are analyzed for different demand functions. McGuire and Staelin (1983) show that product differentiation influences channel choices. Highly differentiated products are more likely to be distributed through integrated channels; close substitutes, on the other hand, are more likely to be distributed via decentralized channels. The rationale is that the existence of the middlemen (retailer) softens the competition and thus manufacturers enjoy higher profit margins with indirect channels. We adopt a similar setting as that in McGuire and Staelin (1983) to capture the features of product differentiation. Unlike their model, however, we analyze the competition softening effect when the middleman-retailer does not affect retail price, by imposing RPM.

With the development of e-commerce, some papers have looked at the question of adding an Internet channel to the existing indirect channel. Chiang et al. (2003) find that it is optimal for a monopoly manufacturer to add the Internet channel even if it does not sell to end-customers. The logic is that because an online channel is a credible threat to steal customers away from the independent retailer, and its existence induces the retailer to lower prices, partly resolving the double-marginalization problem. Accordingly, the monopoly manufacturer's profit increases due to increased quantity sold. Cattani et al. (2006) analyze a supply chain structure whereby a monopoly manufacturer adds a direct Internet channel to the traditional retailers, but commits to equal retail prices across the different channels. They consider three equal-pricing strategies and analyze the optimal wholesale price and retail price after the direct Internet channel is added. Furthermore, the equal-pricing strategy is no longer stable when the Internet channel becomes more convenient for customers than the traditional channel. In contrast to this literature, our model considers the competition between differentiated products and examines the impacts of demand uncertainty and market condition changes on equilibrium channel structure.

Our study is also related to the literature on information acquisition. Li, McKelvey and Page (1987) employ a Cournot model with uncertain demand to analyze firm strategies of conducting research prior to production that helps in obtaining private data on the information of unknown demand. Sasaki (2001) discusses the value of information in a duopoly model with demand uncertainty and a fixed cost of information acquisition. Depending on the magnitude of this fixed cost, different equilibria, including multiple equilibria, can arise. The value of information is related to whether the game is supermodular or submodular. Our equilibrium results are generally consistent with those of Sasaki (2001). However, the current paper focuses on channel stability analysis and provides new insights into the equilibrium channel structure.

3. THE MODEL

We consider a two-stage game with two competing manufacturers and two types of retailing channels. The manufacturers, denoted by i ($i = 1, \quad 2$), produce horizontally differentiated products. The two retailing channels are manufacturer's retail stores and retail stores owned by independent retailers. The manufacturers' problem is to decide how to distribute their products through these two types of channels.

To be consistent with the observation that the retail price is kept the same across the various channels and retailers, we assume RPM. This is a common practice observed in many markets such as clothing, gasoline, appliances, books, groceries, automobiles, and many more (Ippolito 1991), though legally it has not been an fully resolved issue. Under RPM, retailers agree to sell the manufacturer's product at certain prices, at or

above a price floor, or at or below a price ceiling. Common belief is that RPM prevents fierce price cutting among different retailers and may also be implemented as a result of the larger bargaining power of manufacturers and/or the branding concern they have. In practice, manufacturers negotiate with different retailers to determine wholesale prices based on their relative bargaining power. Thus, retailers still enjoy positive surplus under RPM. The existing body of economics and marketing literature provides additional rationales for manufacturers' use of RPM (Telser 1960, Romano 1994, Deneckere et al. 1997).

The choice of distribution channel is less flexible than the choice of prices. Hence, in the first stage of the game, manufacturers simultaneously decide whether to open retail stores or not. If a manufacturer chooses to open own retail stores, its product is sold through both types of retailing channels. The resulting distribution channel is called a dual channel, denoted by " D ". Alternatively, the manufacturer can choose not to open own retail stores and only sell through independent retailers. Such a distribution channel is called an indirect channel, and is denoted by " I ".

In the second stage of the game, manufacturers simultaneously specify the wholesale price, w_i, given the channel structure set in the first stage. Note we assume that manufacturers use the RPM scheme to maintain the same retail prices, p_i, across all independent retail stores and manufacturers' retail stores, if used. Under RPM, manufacturers seize all the surplus from independent retailers. Therefore, we have $p_i = w_i + c$, where c is the unit retailing cost of independent retailers.

The following linear demand function is used to capture the product differentiation:

$$q_1 = \phi d - \frac{1}{1-\gamma} p_1 + \frac{\gamma}{1-\gamma} p_2$$

$$q_2 = (1-\phi) d - \frac{1}{1-\gamma} p_2 + \frac{\gamma}{1-\gamma} p_1$$

where $0 < \phi < 1$, $0 < \gamma < 1$ and $d > 0$. When $p_1 = p_2 = 0$, industry demand $Q = d$ and parameter ϕ captures the absolute difference in demand, or consumers' relative preference, between two competing products. Here we need to be careful with our interpretation of industry demand since the two products are not perfect substitutes. Moreover, when $\phi = 0$ or 1, one manufacturer is no longer active in the market. In this paper, we focus on the cases in which $0 < \phi < 1$. The parameter γ represents the degree of substitutability between two products. When $\gamma = 0$, each firm becomes a monopolist; when $\gamma \to 1$, the products become close-to-perfect substitutes.

Different from the existing research that assumes perfect knowledge with respect to demand, this paper considers demand uncertainty at the manufacturer level. Specifically, manufacturers cannot observe true demand d; instead, they have prior information on the distribution of the market demand, $f(d)$, where $\vec{d} = [\underline{d}, \bar{d}]$. The density function, $f(\cdot)$, is continuous and differentiable, with expected value d^e and variance σ^2. It may be due to the imperfect communication and incentive conflicts between channel members.

On the other hand, retailers possess better information on demand, as they access the market directly. For simplicity, we assume that the retailers observe the true value of $\vec{d}$, i.e., d. Similarly, manufacturers are able to observe actual demand if they open their own retail stores; thus the demand uncertainty embedded in the indirect channel can be resolved in the dual channel with the help of manufacturers' retail stores.

Each unit of product sold incurs two costs, a production cost and a retailing cost. The unit production costs for the two manufacturers are c_1 and c_2, respectively. Independent retailers' unit retailing cost is c for

both products, while the manufacturer's retail store's unit retailing cost is γc for manufacturer i. The parameter $\gamma > 0$ models the relative retailing efficiency of manufacturer's retail stores compared to that of independent retail stores. When $0 \leq \gamma \leq 1$, the manufacture's retail store sells more efficiently than independent retail stores, while $\gamma > 1$ indicates that independent retail stores are more efficient in retailing, which is more common in practice. In the rest of the analysis, we focus on the $\gamma > 1$ case.

When a dual channel is employed, it is assumed that a θ portion of product i is sold through manufacturers' retail stores, while the remaining, $1 - \theta$, is sold through independent retail stores. $\theta \in [0, 1]$, where θ is exogenously determined by manufacturer's marketing strategy, its efficiency in information gathering and retailer's bargaining power.

Next, we examine manufacturers' maximization problem under each of four possible channel structures and detailed Analysis of the Equilibrium Channel Structure is available upon request.

4. CONCLUSION

The current study mainly answers the question as to how the market condition changes affect manufacturers' decision on when to open their own retail stores under the duopoly competition. We analyze the above question from the perspective of demand uncertainty, an angle that has not been explored in the literature. Demand uncertainty can arise from the nature of the products sold, or from the fact that manufacturers know little about their customers and the market. For example, it is more difficult to know customers' needs when products have more design attributes. We believe this is one aspect why it is a common phenomenon for designers to open their own boutique stores in addition to selling through department stores. Depending on the level of demand uncertainty and retailing cost inefficiency, all four channel structures can arise as the market equilibrium.

We find that changes in product substitutability and market share have differential effects on the stability of the equilibrium structure. For most parameter values, an increase in product substitutability makes the structure *II* more sustainable, because reacting to expected demand can work as a buffer that softens the head-to-head competition between highly substitutable products. To the contrary, structure *II* becomes less sustainable with the increase in market share asymmetry. A larger player in a market with high demand uncertainty and low product substitutability has more incentive to open its own retail stores.

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TEACHING BUSINESS IN A DEVELOPING COUNTRY

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ABSTRACT

This is a discussion of some of the issues involved in fostering the intellectual development of undergraduate university students in developing countries where English is the language of instruction but not the native language of the students.   An integrated teaching approach is suggested for adapting teaching methods to the students' local   cultural environment, in pursuit of educational objectives of intellectual growth and development.   This paper explores how such an undertaking can be carried out in developing country environments.   Examples are included from recent experience in teaching business courses at a university in the Eastern Mediterranean region where the great majority of students, faculty and staff are from developing and emerging market countries.

Keywords: Developing Countries; Emerging Markets; Business Education

1. INTRODUCTION

Recently I came across some interesting resource material regarding the educational goals of universities (http://faculty.washington.edu/krummel/guides/bloom.html).   I have incorporated it into a discussion about fostering the intellectual development of undergraduate university students through an integrated program of course structure and design.

2. INTELLECTUAL PROCESSES

From the perspective taken here, modern education involves six core intellectual processes: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom and Krathwohl, 1956).   The most basic intellectual processes are knowledge and comprehension.   Then come the processes of application and analysis, and finally the abstract intellectual processes of synthesis and evaluation.   Each of these core intellectual processes builds on particular skills and abilities, and so different teaching approaches are needed to develop the capabilities used in each intellectual process.

2.1 Knowledge

The most basic intellectual process is KNOWLEDGE itself, or having knowledge.   This encompasses "knowledge of terminology; specific facts; ways and means of dealing with specifics (conventions, trends and sequences; classifications and categories; criteria; methodology); universals and abstractions in a field (principles and generalizations, theories and structures).   KNOWLEDGE is ... defined here as the remembering   (recalling) of appropriate, previously learned information" (http://faculty.washington.edu/krumme/guides/bloom.html).   Having knowledge builds on the ability to "observe and recall information; know dates, events, and places; know the major ideas; [and] master the subject matter" (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html). Teaching approaches that help to develop these abilities emphasize: collecting, defining, describing, enumerating, examining, identifying, indicating who/when/where, labelling, listing, matching, naming, quoting, reproducing, selecting, showing, tabulating, and telling (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html).

2.2 Comprehension

The second Basic intellectual process is COMPREHENSION. This refers to "grasping (understanding) the meaning of informational materials."   The process of comprehension requires an ability to "understand information, grasp meaning, translate knowledge into new context, interpret facts, compare, contrast, order, group, infer causes, predict consequences". Teaching approaches to develop these skills and abilities include: associating, contrasting, describing, differentiating, discussing, distinguishing, estimating, extending, interpreting, predicting, and summarizing. (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html)

2.3 Application

The first Intermediate intellectual process, APPLICATION, involves "using previously learned information in new and concrete situations to solve problems that have single or best answers". This intellectual process relies on the capability to "use information, use methods, concepts, theories in new situations, [and] solve problems using required skills or knowledge".   Teaching approaches to build capabilities used in APPLICATION include: applying, acting, administering, articulating, assessing, calculating, changing, charting, classifying, collecting, completing, computing, constructing, contributing, controlling, demonstrating,

determining, developing, discovering, establishing, examining, extending, experimenting, illustrating, implementing, including, informing, instructing, modifying, operationalizing, participating, predicting, preparing, producing, projecting, providing, relating, reporting, showing, solving, teaching, transferring, using, and utilizing (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html).

2.4 Analysis
The second Intermediate level intellectual process is ANALYSIS. This refers to "breaking down informational materials into their component parts, examining ... such information to develop divergent conclusions by identifying motivations or causes, making inferences, and/or finding evidence to support generalizations" (http://faculty.washington.edu/krumme/guides/bloom.html)   Analysis relies on the ability to "see patterns, organiz[e] parts, recognize hidden meanings, identify components" which is learned through: analyzing, arranging, classifying, connecting, dividing, explaining, inferring, ordering, selecting, separating (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html).

2.5 Synthesis
The first Advanced intellectual process is SYNTHESIS. This means "creatively or divergently applying prior knowledge and skills to produce a new or original whole". Relevant capabilities include "use old ideas to create new ones, generalize from given facts, relate knowledge from several areas, predict, draw conclusions". Teaching approaches that develop skills and abilities used in SYNTHESIS include: adapting, anticipating, categorizing, collaborating, combining, communicating, comparing, compiling, composing, contrasting, creating, designing, devising, expressing, facilitating, formulating, generalizing, generating, incorporating, individualizing, initiating, integrating, inventing, modeling, modifying, negotiating, planning, preparing, rearranging, reconstructing, reinforcing, reorganizing, revising, rewriting, structuring, substituting, and validating (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html).

2.6 Evaluation
The most Advanced intellectual process in the model is EVALUATION. This entails "judging the value of material based on ... standards/opinions, resulting in an end product, with a given purpose, without real right or wrong answers". Abilities involved in EVALUATION include: "compare and discriminate between ideas, assess value of theories, presentations, make choices based on reasoned argument, verify value of evidence, recognize subjectivity".   Teaching approaches that can be used to develop capabilities used in EVALUATION emphasize: assessing, comparing, concluding, convincing, deciding, discriminating, explaining, grading, judging, measuring, ranking, recommending, selecting, supporting, summarizing, and testing (Bloom, 1984, cited in: http://faculty.washington.edu/krumme/guides/bloom.html).

3. TEACHING EXPERIENCES
In university education, the focus shifts from an emphasis on the intellectual processes of knowledge and comprehension to those involving application and analysis and finally to the processes of synthesis and evaluation.   In most career fields, intellectual development is essential for professional advancement. This is because it is essential for solving problems and making effective decisions, two of the most important managerial tasks.

3.1 Problem Identification
The majority of the students I encountered in teaching a wide range of first-, second-, third- and fourth-year courses[1] lacked the necessary skills in English to fully benefit from university education. Very few were sufficiently proficient in any area, whether reading, writing, listening or speaking English. They were essentially unable to follow a lecture, read a chapter, discuss a course topic, or write a paper at the university level. As a result of all these handicaps, most students were suffering from what amounts to a general learning disability. In conversations with many colleagues, I was told by some that this was because of lack of practice in English and a secondary school system that emphasized rote learning. Others including administrators and those teaching quantitative courses were largely unaware of the issue. A few of the foreign language instructors considered it a language learning problem. However, no one I talked to had any practical suggestions except for two who were deeply concerned, as I was, about the rudimentary intellectual level at which most students were operating. One was a British professor of International Relations and the other was an American professor of Psychology.

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[1] Each year: BUS 111-Fundamentals of Business; BUS 222-Organization Theory; BUS 321-Human Resource Management; BUS 415-Business Ethics; and BUS 470-Crosscultural Management.

Although English is a contributing factor, the deeper problem is the students' limited ability to think. In a way, they are intellectually impaired. Intellectual development occurs as one engages in intellectual activities such as articulating, discussing, and debating ideas and concepts. It is the foundation for higher order learning, complex cognition, and abstract thinking. After witnessing students' performance on mid-term exams in my first semester, I began to experiment with ways to improve their abilities for the next level. The goal was to structure my courses as a sequence of increasing challenges in order to get students ready for the next level of courses.

3.2 First and Second Year Courses
I organized the two lower-division courses around concrete learning objectives, emphasizing the Basic intellectual processes of KNOWLEDGE and COMPREHENSION. The first Intermediate process, APPLICATION, was introduced in the first semester course and emphasized in the fourth semester. In my first-semester (100-level) course on *Fundamentals of Business*, the focus was on basic knowledge and comprehension of business topics with an opportunity to apply the new knowledge. Student accountability was enforced through various techniques for control. My fourth-semester course on *Organization Theory* was designed to emphasize the application of complex new conceptual and theoretical knowledge to analyzing and solving practical business problems. There was also greater reliance on student initiative and self-discipline in this course.

3.3 Third and Fourth Year Courses
My three upper-division courses were designed to emphasize the capabilities used in the intellectual processes of ANALYSIS, SYNTHESIS and EVALUATION. The majority of students in all three upper-division courses were afraid of shifting to higher level intellectual processes and used every possible means of active and passive resistance to avoid it. There were also a few in each class who accepted the challenges and did very well, but didn't like being held back by the others. The third-year, fifth-semester (300-level) course on *Human Resource Management* was designed to emphasize capabilities necessary for the intellectual processes of APPLICATION and ANALYSIS. This was accomplished primarily through project-related activities accompanied by some lectures on project-related topics. New course knowledge and skills acquired in previous courses were combined to solve course-related problems. Most of the students were very unhappy about having to use statistics but eventually gave in and did well despite a lot of complaining. The two fourth-year (400-level) courses were conducted as advanced seminars, focusing on the Advanced intellectual processes of SYNTHESIS and EVALUATION. Both incorporated conceptual and/or theoretical perspectives with practical business considerations. One emphasized conceptual viewpoints, while the other placed greater emphasis on theory. Among those students who took both seminars in the same semester, the response to ANALYSIS and SYNTHESIS of concepts in *Crosscultural Management* was very favorable while the response to SYNTHESIS and EVALUATION of theories in *Business Ethics* was neutral. This fourth-year elective seminar for Business majors and other students was on *Crosscultural Management*. I taught it on a slightly less Advanced level than *Business Ethics* because the theoretical content of *Crosscultural Management* is less well-developed. Instead of using theory, we used conceptual models that are easier to understand than abstract theory, because they are relevant to the students' own experience. The second fourth-year elective seminar, *Business Ethics*, was more complex and theoretical in comparison to other undergraduate business courses. It involved all six of the core intellectual processes, emphasizing SYNTHESIS and EVALUATION. It was beyond the capability of approximately half of the students in the class, despite my best efforts to bridge the gap. With the help of an original analytical technique that I designed to structure the processes of SYNTHESIS and EVALUATION for them, they were able to pass the final exam. On the other hand, nearly a third of the students did very well.

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http://faculty.washington.edu/krummel/guides/bloom.html

ATTITUDES TOWARD ADVERGAMING:
A PHYSIOLOGICAL AND ATTITUDINAL TESTING OF GAME PLAYERS TOWARD ONLINE ADVERTISING USING EYE TRACKING TECHNOLOGY

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INTRODUCTION

Advergaming is the practice of using games, particularly underlined computer games, to advertise or promote a product. Advergaming is the inclusion and delivery of advertising messages through electronic games. The main objectives of this technique are to build brand awareness, offer product information, drive traffic to web sites, and provide a means to compare similar products. Advergaming's ultimate objective is to develop lasting exchange relationships with customers (Hernandez and Minor 2003), through an immersive and entertaining experience.

Because the entertaining experience of electronic games is believed to enrich the relationship between user and the advertised brand (Saunders 2001), advergaming is gaining recognition among advertisers. The increasing popularity of this medium, and the unique capability to maintain players' full attention during the time the game is being played, companies' interest in advergaming is increasing. According to (Buss 2003), Leviathan Games Inc., a Seattle-based creator of video-game-type contests online, has seen sales grow by 250 percent in the last two years. The co-founder of Leviathan Games Inc., Wyeth Ridgway stated, "Obviously you're not going to meet your entire audience with an online computer game, but you're meeting a very targeted portion, and one that, on a product-by-product basis, could be the exact people you're most interested in meeting," "Our forecast for 'advergames' is that it'll be part of every advertising campaign that large companies do at some point in the future." This illustrates the great potential for advergaming and how companies are using technology to reach consumers via an entertaining experience. Advergaming is becoming so popular that the US Army has built a video game to promote the army to young men (Cesare 2005). Toyota developed a racing game called Toyota Adrenaline and used it to help launch a line of cars. US Today (2003) reported that, "video games have become nearly as much a part of college life as textbooks and midterms."

PURPOSE
The main objective of this research is to find whether there is a relationship between gaze time, ad location and consumer ad recall and attitude toward the ad. The use of the eye tracker will allow us to identify the hot spots which measure gaze time and location on the screen and test whether that has an impact on rate of recall.

To accomplish this objective, eye tracking will be employed in addition to the use of attitudinal surveys. Through the use of this device, we can build on and extend the existing research that attempted to measure advertising issues such as intrusiveness (Li, Edwards and Lee 2002), irritation (Aaker and Bruzzone 1985; Bauer and Greyser 1968) and ad avoidance and effectiveness (Speck and Elliott 1997a, b). We will also be able to measure consumer attitude toward this new form and delivery of advertising.

METHODOLOGY

Eye Tracker
The eye tracker will help in determining the amount of time the consumer's eye is in direct contact with the product advertisement.To accomplish the proposed research objectives, a comprehensive literature review dealing with online advertising will have to be conducted. This literature review will allow us to identify previous theories, models, gaps and additional opportunities in the advergaming area of research. Then, a group of experiments will be conducted. In these experiments, a group of consumers will be recruited to participate in the experiments. Participants will be given an incentive to take part in playing an online video game while exposed to online product advertisements. The participants will view the ads on an eye tracking device. After finishing the video game, participants will also be asked to fill an attitudinal survey to collect additional data.

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