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Souad Mohamed
Brunel University

Zahir Irani
Brunel University

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Validating Indirect Human Costs MEFM Taxonomy: Case Studies from the Banking Sector

Souad Mohamed

Information Systems Evaluation & Integration
Group (ISEing)
Department of Information Systems and
Computing
Brunel University, Uxbridge,
Middlesex, UB8 3PH,
United Kingdom
souad.mohamed@brunel.ac.uk

Zahir Irani

Information Systems Evaluation & Integration
Group (ISEing)
Department of Information Systems and
Computing
Brunel University, Uxbridge
Middlesex, UB8 3PH,
United Kingdom
zahir.irani@brunel.ac.uk

ABSTRACT

This paper focuses on the indirect human costs associated with the adoption of Information Systems. In doing so, the authors establish a need to account for these cost factors during the investment evaluation processes. In moving from a conceptual level to an empirical phase, the validity of the taxonomy proposed is tested by way of a case study that involves two multinational organizations. The proposed MEFM taxonomy allocates indirect human costs to four Information Systems divisions, namely, Management, Employee, Finance and Maintenance divisions. The empirical findings extrapolated from the case study demonstrate that both organizations recognized the proposed indirect human cost as being associated with the adoption of information systems rather than being included within the evaluation process or investment proposals. The paper concludes with a discussion of the findings in light of the MEFM taxonomy, areas for future research then being suggested.

Keywords

Indirect Human Cost, MEFM Taxonomy, IS Divisions and Cost Allocation

INTRODUCTION

The research presented in this paper focuses on the indirect human costs associated with the adoption Information Systems (IS). This is considered an area that has been addressed infrequently in the normative IS evaluation literature. Research suggests that indirect human costs are not accounted for in the evaluation process or proposals of IT/IS investment, primarily because they are hidden and not easily identified (Willcocks 1992; Currie et al. (1997). Indeed, Hochstrasser (1992) suggests that management dedicate less attention to indirect costs associated with IT, and that these costs can be up to four times greater than direct IT cost factors; adding that human and organizational costs in particular are infrequently budgeted for in IT investment proposals. Waterhouse (1995) argues that the costs of developing a system and operating it are not fully acknowledged; prior to the investment. Irani et al. (1999) believe that although some indirect costs, such as training and the recruitment of staff, are all reasonably obvious, it is, however, less obvious how to fairly allocate these indirect cost. Irani and Love (2000) reported that, as management do not have a framework with which to evaluate their IT investment, they have a tendency to be narrow-minded when it comes to IT investment decisions, and they therefore concluded that management still does not fully understand IT cost portfolios because of its significant human and organization dimension. Their research suggests that during the investment decision-making process, evaluators account for the upper estimates for costs and the lower estimates for benefits, but that, in so doing, this still does not solve the problem of running over budget with IT projects.

The above findings offer suitable grounding that suggests it would be useful to explore further how IT/IS costs may be identified and appropriately allocated. Mohamed et al. (2002) proposed a conceptual Management, Employee, Finance and Maintenance (MEFM) indirect human cost taxonomy that facilitates the identification and allocation of indirect human costs associated with IS adoption. Using this conceptual MEFM taxonomy, this paper reports the findings from two case studies carried out in the banking sector, involving two multinational investment banks that adopt information systems as a core of their business. The paper presents findings from this ongoing research aimed at developing indirect human cost taxonomies, which may be useful in helping managers to evaluate information systems investments and to prepare accurate investment budget proposals.

MEFM TAXONOMY

Love et al. (2002) emphasize the importance of human and organizational aspects associated with the IT evaluation process: they attribute this to the implementation of IT having a ‘cascading’ effect throughout a whole organization. Mohamed et al. (2002) suggest that one of the main factors enabling organizations to *allocate* indirect costs or indirect human costs; is the identification of their components (cost factors). For example, in the management of indirect human costs, the components could be time, effort, dedication, training, and so forth. Mohamed et al. (2002) used the IS normative literature to develop the MEFM taxonomy (depicted in Figure 2.1) of indirect human costs. The taxonomy presents categories of indirect human costs cited in the IS literature. Categorizing these costs in such a way may facilitate the allocation of their sub-costs into divisions within the organization. In doing so, one would also include the identified indirect human costs in the management budget, employees’ budget, finance budget and maintenance budget. These divisions were used for the classifications, as they emerged from the cost factors cited in the literature. The MEFM taxonomy encompasses four main categories (each category representing a division within IS) of indirect human costs associated with the adoption of IS, namely management, employee, finance and maintenance indirect human cost categories, and the components that comprise these categories. Mohamed et al. (2002) also explained how each cost component is a cost to the organization.

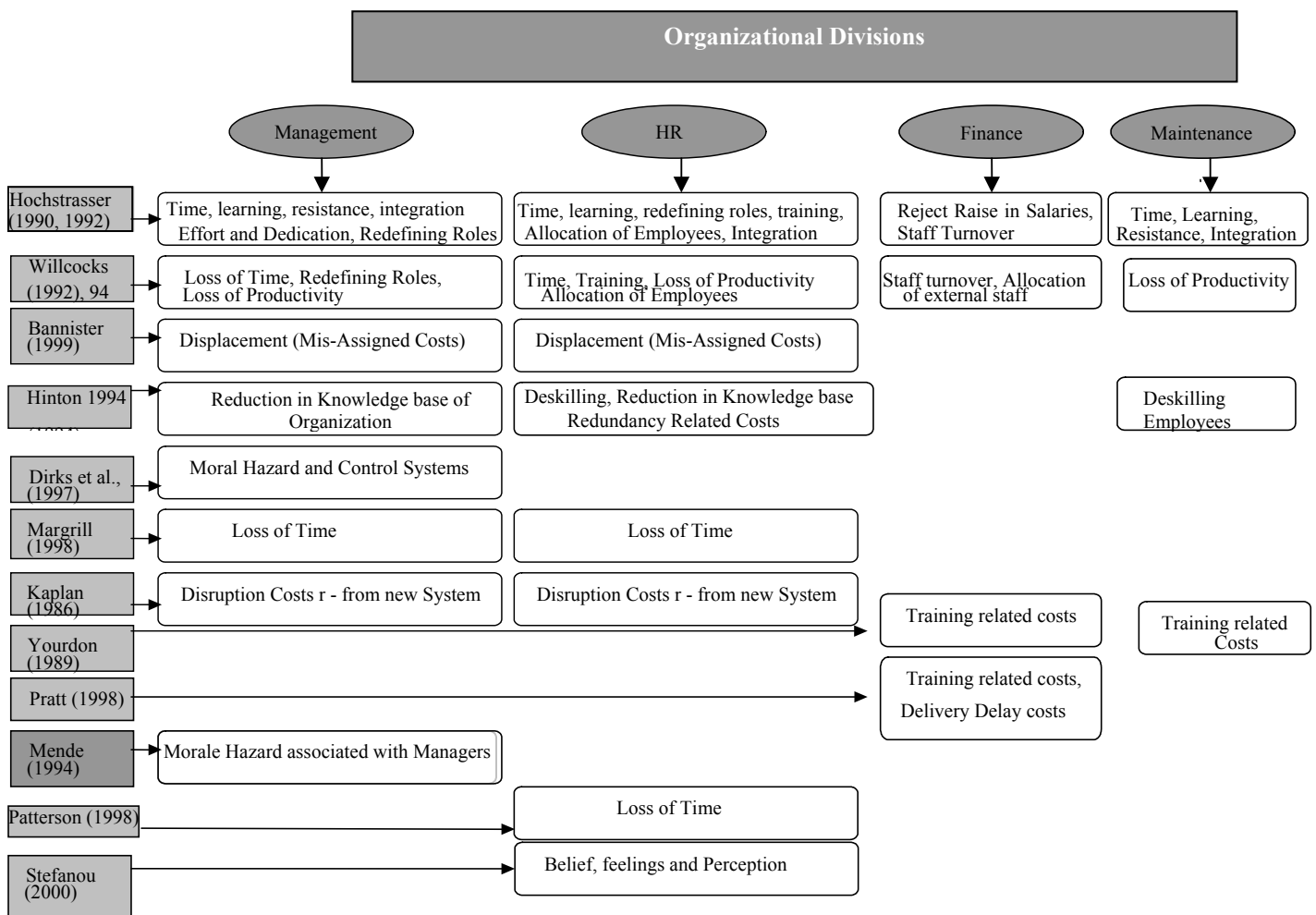


Figure 2.1 Conceptual Taxonomy of Indirect Human Costs Associated with IS Adoption Mohamed et al. (2002)

RESEARCH METHDOLOGY

Moving from the conceptual level to the empirical phase, the validity of the conceptual MEFM taxonomy presented in the previous section can be validated. The aim of the empirical enquiry is twofold:

- to substantiate the inclusion of indirect human cost in the IS divisions;
- to investigate whether these indirect human cost factors are included in the evaluation process or in the IS investment budget proposals.

A case research strategy is used for studying a phenomenon, for testing research [amongst other objectives] questions/hypotheses and/or for theory building (Strauss and Corbin 1998). Yin (1994) suggests that ‘how’ and ‘why’ questions are most suited to the use of the case study approach to gathering data. More specifically, our research poses the following questions based on the aims of the research stated above:

Research question 1: *how* are these indirect costs actually allocated within the IS divisions?

Research question 2: *why* are the indirect human costs not included in the evaluation process or investment proposals?

The case research presented in this paper, is multi-case research. The authors carried out this study using interview techniques as the main instrument for data collection. Centering on the identification and assignment of indirect human costs, data were collected and units of analysis were developed, as discussed in the following sections.

Background of the Organizations Used In the Case Study

Since the focus of this research is the indirect costs associated with IS adoption, the criteria used in the selection of the two organizations were as follows:

	Case Study Organization	
	IB1	IB2
Adopt and recognize IS as a core of their business	✓	✓
Claim to/ have a rigorous/ establish good IS costing	✓	✓
Have some kind of budget allocation system	✓	✓
Concerned with cost saving	✓	✓

Table 3.1: Organization Selecting Criteria

The organizations involved are two multinational investment banks operating in the private sector. Investment Bank 1 (IB1) is one of the world's leading financial management and advisory companies, with offices in almost 40 countries and total client assets of approximately \$1.3 trillion. Through this bank, investment managers are one of the world's largest managers of financial assets. The organization has more than 70,000 employees. The second organization, Investment Bank 2 (IB2), is also a multinational bank with the most diverse array of products and the greatest distribution capacity of any financial firm in the world; its 270,000 employees manage 200 million customer accounts across six continents in more than 100 countries. The banks have chosen to remain anonymous and so ‘IB1’ and ‘IB2’ are used to refer to these organizations.

Data Collection

Multiple case studies were employed within this case research to explore and enhance understanding of indirect human costs. A variety of data sources have been used that have lead to the findings presented in this paper; these data sources included transcription of interview data, illustrative materials, web site material and past project documentation. A predefined interview protocol was used to determine the data needed for the research. Semi-structured interviews were conducted with a number of employees of the organization (e.g. product manager, project manager, senior services delivery manager, assistant services delivery manager). These employees were selected, as they are people that would know the types of costs that occur within the organizations. Others, such as independent auditors, for example, are external to the organization; they would know the costs but would not be able to recognize the cost categories.

Primary data were derived from lengthy open and semi-structured interviews, carried out from July 2002 to January 2003. Interviews lasted from two to three and a half hours, and every interview was conducted on a one-to-one basis. An interview agenda was developed and used as a guide in the interview process. Some open-ended questions were used in the interviews, as these may yield responses of a different type to those gained from a more structured format. In addition to the interviews, wherever possible additional information was gathered through web sites (e.g. history of the organization) and company documentation (e.g. annual reports). Telephone and e-mail were also used to elucidate and probe unclear issues that, in some cases, occurred subsequent to transcribing the interviews. In an attempt to avoid interview bias associated with this type of research, triangulation between the results of the open interviews and the structured interviews was performed. Every

interview was tape-recorded and then transcribed. The results of the transcription analysis were given to each interviewee to check and detect any discrepancies that may have occurred, in an attempt to avoid any interviewer bias. Through an iterative process of interviews followed by documentation and transcript analysis, data collection was carried out until enough data was collected to test the proposed taxonomy. To help lessen the contradictions associated with data gathering across multiple sources, the data were crosschecked several times.

Data Analysis

Data were scrutinized and the cost factors were organized by recurring theme; the associated categories were then linked. Subsequently, the data were categorized into existing concepts in the proposed taxonomy.

Adopting the grounded theory approach (Glaser and Strauss, 1967), data were analyzed using an element of grounded theory, which is based on the coding of data the emerging code forms the direction and eventually decides the relevant aspects to continue sampling. The analysis element was specifically selected as it allows to code and categories the emerging cost factors, thus either fitting the merging costs within the existing categories (taxonomy proposed) or form new categories. Data were re-examined and re-coded to determine the categories and concepts that include as much of the data as possible. This repeated continuous inspection of the data should result in a set of broad categories and associated cost factors that puts forward the important indirect human costs, and the importance of their inclusion in different stages of the IS evaluation process. Once sampling did not result in any new variables or concepts, theoretical saturation is accomplished and no further sampling was carried out.

FINDINGS AND DISCUSSION

The results obtained from each organization were analyzed in relation to the MEFM taxonomy.

Case Study Organization

Division	IB1	IB2	Comments
Management	✓	✓	IB1 call it Board of Directors/Management
Employee	✓	✓	Both banks called it Human resources
Finance	✓	✓	
Maintenance	✓	✓	Both banks called it IT or computer Services
Comments	Named some divisions differently	Named some divisions differently	

Table 3.2: MEFM Taxonomy of Corresponding IS Divisions

As illustrated in table 3.2, both organizations seem to have the main divisions of their organizations (corresponding to the ones proposed in the MEFM taxonomy) extending across all the different business units or sub-divisions. Nevertheless, each business unit may deal with their own human resources issues. They is one main human resources division that all human resources in all business units share. Nevertheless, IB1 referred to the management division as a *Board of Directors* and IB2 refers to it as a *Management Division*, while both banks stated that they call the employee division *Human Resources*, and the maintenance division *IT Support* or *Computer Services*. Subsequently, cost identification within each organizational division was examined in each case study organization.

Initially, interviewees were asked whether they recognize the list of the indirect human costs presented in the MEFM taxonomy as costs to their organization: table 3.3 shows their responses:

The ranking of the inclusion/occurrence of cost factors used throughout this study follows the following scale - ‘does not occur’ (○), ‘occurs sometimes’ (◐), ‘occurs’ (●). The shaded areas of are only used to help the reader distinguish the different organizations.

Indirect Human Cost Component (IHC)	IB1	IB2
Loss of Time	●	●
Learning costs	●	◐
Resistance To New Systems	●	●
Effort & Dedication Spent By Management	●	◐
Consequences of Redefine Roles	●	●
Mis-management of training	◐	◐
Integration With New Systems	●	◐
Rejecting Salary Raise	●	◐
Staff turnover	●	●
Loss of Productivity	●	●
Displacement (Mis-Assigned Costs)	●	●
Reduction Knowledge Base in Organization	●	●
Deskilling Employees	●	○
Delayed Delivery of A System	●	●
Cost Associated with Redundancy	●	●
Morale Hazard associated with Managers	○	○
Disruption Costs resulting from Introducing New System	●	○
Belief, feeling, and perception	○	●

Table 3.3: IHCs recognized by case study organizations

Interviewees in IB1 identified all the proposed indirect human costs (IHCs) as costs associated with their IS adoption: however, IB2 disagreed that IHCs such as *training* and *effort and dedication* were indirect human costs, but instead considered them to be direct costs, claiming that these costs are planned for and are considered to be part of the job. Moreover, although IB2 agree that *change in salary* is an important indirect human cost, they do not believe that it is actually a cost to their organization. The interviewees appreciate that, as result of training or acquiring new skills, employees will be aware of their new marketable skills. Therefore, they may request an increase in their salaries to their new marketable value. Consequently, rejecting the request may result in *staff turnover*. This they agree as having a great impact on the organization; significant costs could result from *losing time* and money already invested in the employee, in addition, requiring the same amount of money (if not more) for new recruits. Furthermore, high staff turnover results in a significant change in the knowledge base of the organization that is impossible to predict. Although aware of all these impacts of the *change in salary* rejection, IB2 state that this is not true in the current climate. At the time of carrying out the case study, both organizations were going through a great deal of redundancies.

To test the validity of the (MEFM) taxonomy, both case study organizations were asked whether they agree that the proposed indirect human costs are associated with the assigned IS divisions.

Case Study Organizations	IB1	IB2	IB1	IB2	IB1	IB2	IB1	IB2
IS Divisions →	Management (Middle & Top level management)		Human Resources		Finance		IT	
IHC ↓								
Loss of Time	●	○	●	○	●	○	●	○
Learning Cost	○	●	○	○	○	○	●	○
Resistance To New Systems	○	●	○	○	●	○	●	●
Effort & Dedication Spent By Management	○	○	●	○	●	○	●	●
Consequences of Redefine Roles	●	○	●	○	●	○	●	●
Mis-management of training	○	○	●	○	○	○	●	●
Integration With New Systems	○	○		○	○	○	●	●
Loss of productivity	○	●	●	○	○	○	●	○
Rejecting Salary Raise	●	○	●	○	○	○	○	○
Staff turnover	○	○	○	○	○	○	●	○
Costs associated with Redundancy	●	●	●	○	●	○	●	○
Delay delivery of a system	○	○	○	○	○	○	●	●
Reduction in knowledge	○	●	○	●	○	●	●	●
Displacement (mis-assigned cost)	○	○	○	○	○	○	●	○
Deskilling Employees	●	○	○	○	○	○	●	○
Disruption costs of Introducing a new system	●	○	○	○	○	○	●	○
Morale Hazard associated with managers	○	○	○	○	○	○	○	○
Belief, feeling, and perception	○	○	●	○	○	○	●	○

Table 3.4 : Assigning IHCs to their Organizational Divisions

As shown in table 3.4 above, both organizations identified indirect human costs as being associated with at least one IS division. The only cost that was not allocated to a division was morale hazard; Mende (1994) also calls this ‘professionalism’. It is defined as the state in which the IS managers are interested in gaining knowledge that will help them to determine their job market value rather than being interested in organizational benefits. It could occur when decision rights are assigned to individuals that are expert, and resources of the organization being used for personal benefit rather than the organizational benefits. Managers may use their decision right to maintain their own interest rather than trying to meet organizational objectives (Dirks et al. 1997, Mende 1994). Both IB1 and IB2 believe that morale hazard is non-existent in

their organizations, as every manager always has someone to report to; hence, any type of training needs to be approved by someone else. Furthermore, they believe that the organizations actually encourage personal development presently: thus, training that benefits and enhances an employee’s experience would not be rejected.

Findings from both IB1 and IB2 reveal IT to be the division with the highest number of indirect human costs associated with IS adoption, while IB1 identifies *time*, *redundancy*, and *redefining roles* to be indirect cost factors that influence all IS divisions. This contradicts the MEFM taxonomy, which illustrates that the human resources and management division has the highest number of indirect human costs associated with IS adoption. IB1 identifies *time*, *learning*, *training*, *loss of productivity* and *redundancy* to be cost factors appropriate to all divisions, in line with the initially proposed MEFM taxonomy. Nevertheless, interviewees stated that this was dependent on the type of system adopted and the project size. In contrast, findings from IB2 illustrate that *time* is not actually a cost factor in any division: its length can differ depending on the task being carried out and the person performing it and it is considered as part of the management’s assigned jobs and not a hidden cost. , IB2 does not seem to allocate approximately a third of the costs that they initially identified as indirect human costs to any IS division, and this is in line with the normative literature. Clearly, there is a need to look more carefully at these costs, as there is evidence that, although these indirect costs are identified as a cost to the organizations, they are nevertheless not appropriately allocated.

Having confirmed that both organizations can identify the proposed indirect human costs and allocate some of them to the suggested IS divisions, it would be interesting to find out whether they considers these costs in the IS evaluation process or their investment budget proposals.

Case Study Organization	IB1	IB2	IB1	IB2
IHC	Included In The Evaluation Process		Included In IS Budget Proposals	
Loss of Time	●	○	●	○
Learning Costs	●	○	●	○
Resistance Associated with New Systems	○	○	○	○
Effort & Dedication of Managers	○	○	○	○
Cost associated with Redefine Roles	●	●	●	●
Mis- Management of Training	●	●	●	●
Integration Costs Associated with Introduction of A New System	●	●	●	●
Loss of Productivity	○	○	○	○
Rejecting Raise In Salary	○	○	○	○
Staff Turnover	○	○	○	○
Costs Associated With Redundancy	○	●	○	○
Delay Delivery Of A System	○	●	●	●
Case Study Organization	IB1	IB2	IB1	IB2

IHC	Included In The Evaluation Process		Included In IS Budget Proposals	
Reduction In Knowledge Base of The Organization	○	○	○	○
Displacement (Mi-assigned cost)	○	○	○	○
Deskilling of Employee	○	○	○	○
Disruption Costs Associated With Introducing A New System	○	○	●	○
Morale Hazard Associated With Mangers	○	○	○	○
Belief, Feeling, And Perception	○	○	○	○

Table 3.5: Inclusion of IHC in Evaluation & Budget Proposals of IS

Both IB1 and IB2 included only a third of the indirect human costs in the evaluation process, i.e. almost two thirds of the costs they identify as indirect human costs to their organization are neglected. IB2 includes just above a third of the costs they identify as an indirect human cost to their IS divisions in their investment budget proposals. Similarly, IB1 includes only just about half of the costs they identify as an indirect human cost to their IS divisions in their investment budget proposals. The interviewees from both organizations stated that having such indirect human cost allocation is beneficial in facilitating more accurate investment proposals.

Both organizations recommended that the proposed list of indirect human costs be divided into tangible and intangible costs, as that would facilitate the identification, estimation and management of the indirect costs. When managers were asked if performance measures were established for estimating these indirect human costs, both organizations revealed that they only estimate some of these costs (those costs included in the budget proposals). However, each organization seems to have their own method of cost estimation in general, and all managers seem to have their own personal view, so it seems that estimation of indirect human costs is based on the personal approaches of management and there is no standard procedure to be followed. Nevertheless, they all welcomed the idea of developing standard performance measures for the main indirect human costs, and thought it would be very beneficial, particularly given that they are both organizations in the private sector, where some of the main concerns are, indeed, cost saving and investment justification.

There is much concern with regard to the extent that qualitative research can be generalized outside of the confines of the inquiry, principally, in the present study, as the sample of companies was relatively few. Thus, qualitative case study research does not offer the pretence of replication, as controlling the research settings would undermine the interaction of the variables and thus influence the underlying philosophy. However, in future research, more companies will be studied, as this may facilitate identifying areas of potential indirect human costs and savings.

CONCLUSION

This paper reports the findings of a case study. The results of the case study reveal that the MEFM taxonomy may be beneficial in allocating indirect human costs, given that its categories comprise existing IS divisions within the organizations in the case study. The organizations used in this case study were thus able to identify easily indirect human cost factors and assign them to the corresponding IS divisions. The organizations also considered that the IT division was the division that needs to be most targeted, as it has the highest number of indirect human costs associated with it. However, the empirical evidence gathered from these two organizations indicate that there is a need to identify the barriers for identifying, allocating, and including indirect human costs in both the IS evaluation process and budget proposals. In particular, the findings confirmed that, although majority of these indirect costs are not accounted for in the IS evaluation process or IS budget, they are nevertheless taken out of the organizational overhead or the budget of other departments. Thus, it seems that there is need for all these views to be pulled together into a common frame of reference. The frame of reference would facilitate the identification of the potential indirect human costs, thus enabling their allocation, management and control. Once these costs are controlled they can be estimated and reduced, thus contributing in preventing budget overruns.

The cost taxonomy presented is only a starting point, as it is limited to the cost factors identified through the literature review and the two case studies in the private sector. In so doing, it did not leave room for other representations or forms of allocation for cost factors apart from those appearing in the main divisions (management, hr, it and finance) spanning the different business units. Hence, the data collection and the units of analysis were restricted to the costs occurring in these divisions. Nevertheless, the identification of the *same* cost factors across both organizations studied generates an interesting outcome of potential cost factors and can be considered by decision makers and evaluators during the budget allocation and evaluation process.

Our agenda for future research includes the need to develop the understanding of indirect human costs further, and to set out measures that allow the effective evaluation of these costs. These measures must take the impact of these costs into account and, more essentially, identify performance measures of these costs, thus offering decision-makers a frame of reference when considering the evaluation of indirect human costs. Further testing of the validity of the taxonomy is needed, to see how it can aid managers in identifying and managing the main indirect human costs, and subsequently to help them to accommodate them adequately in the justification process and investment proposals. Given the amount of money spent on information systems and the often-considerable amount of risk involved, it would seem that a better understanding of indirect costs and their impact on both employees and the organization is needed. Indirect human costs are underestimated and little understood. The MEFM indirect human costs taxonomy provides a useful first step towards a better understanding of this area of information systems and thus makes its *contribution* towards developing a frame of reference for identifying, assigning and evaluating information systems costs.

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