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Charlotte Brown

Lancaster University Management School, c.brown1@lancaster.ac.uk

Paul Goodwin

University of Bath

Robert Fildes

University of Bath

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BETWEEN SUCCESS AND FAILURE: A FORECASTING SYSTEM IN USE

Charlotte Brown

*Department of Management Science, Lancaster University Management School,
Lancaster, LA1 4YX, UK*

Email: c.brown1@lancaster.ac.uk

Phone: 07788 518579

Paul Goodwin

The Management School, University of Bath, Bath, UK

Robert Fildes

*Department of Management Science, Lancaster University Management School,
Lancaster, UK*

Abstract:

This short paper is intended to describe a research project in progress. Success/failure of information systems (IS) is a critical discussion in the literature. The constructivist approach to this problem has emphasised the importance of narratives in determining whether the implementation of an information system is said to have succeeded or failed. This research project aims to extend the existing literature of success/failure by considering a case study of a pharmaceutical firm that implemented a forecasting support system (FSS). It examines the contrasting narratives of success and failure that emerge from the organization and from forecasting scientists observing and evaluating forecasting practices at the firm against idealised norms. This paper proposes, although it does not develop, a theoretical perspective on this situation drawn from Habermas' ideas of lifeworld/system in order to explain how different interpretations of rational behaviour in forecasting can emerge.

Key words: *information systems, habermas, success/failure, lifeworld/system*

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This short paper is intended to describe a research project in progress. Success/failure of information systems (IS) is a critical discussion in the literature. The constructivist approach to this problem has emphasised the importance of narratives in determining whether the implementation of an information system is said to have succeeded or failed. This research project aims to extend the existing literature of success/failure by considering a case study of a pharmaceutical firm that implemented a forecasting support system (FSS). It examines the contrasting narratives of success and failure that emerge from the organization and from forecasting scientists observing and evaluating forecasting practices at the firm against idealised norms. This paper proposes, although it does not develop, a theoretical perspective on this situation drawn from Habermas' ideas of lifeworld/system in order to explain how different interpretations of rational behaviour in forecasting can emerge.

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1.0 Introduction and review of the literature

The emergence of information technology as a vital tool for managerial tasks has been paralleled by the growth of research that asks how this tool can be developed, implemented and used successfully in organizations. This manifests itself particularly in the information systems (IS) literature in analyses that locate an IS failure within an organization and then attempt to unravel its origins. This research historically originated in discussions of mechanical deficiencies (Lyytinen, 1987), but increasingly focused on cases not of simple failure to function, but problems of mismanagement, misuse, and abandonment (Wilson and Howcroft, 2002).

Epistemologically, two approaches have emerged within this debate. One strand of this literature attempts to isolate the factors that predict and/or permit success. This literature has developed normative descriptions of idealized development and implementation processes, and proposed multiple tools and techniques to mitigate the risk of failure (e.g. DeLone and McLean, 1992). Research of this type suggests that methods can be found to identify, manage and/or avoid potentially failure-inducing issues related to the organization, human participants and the organizational culture in which the technology is to operate (Mitev, 2000).

This literature is critiqued by a second thread of this debate, which argues that normative and instrumental approaches to understanding the failure of information systems rely upon an faulty assumption that technology is inherently neutral (Mitev, 2000). The second type of research, by contrast, broadly identifies with constructivist

schools of thought. Success or failure of information systems is understood in this view to be socially constituted. It is determined by the dominant narrative that emerges from organizational participants, irrespective of the extent to which the project conforms to checklists of success (Wilson and Howcroft, 2002). This type of analysis therefore relies upon investigating the relationship between value-laden technological change and patterns of interests and power within the firm. Recent examples include Brown and Jones (1998), who consider narratives of doom that emerged in a failed IS project at a UK hospital; Fincham (2002), who considers the emergence of different dominant success/failure narratives within two financial services firms; and Bartis and Mitev (2008) who discussed the impact of managers “disguising” a failure as a success in order to save face or secure power in a case study firm. These case studies all consider competing intra-organizational narratives.

This short paper outlines research in progress intended to extend this latter literature. This research project will consider a case study where the dominant narrative that emerged from a large pharmaceutical firm about the implementation of a new forecasting support system (FSS) was one of success. It will contrast this to a narrative of at least partial failure that emerges from the scientific forecasting community as they observe the underlying technologies in use. This latter narrative forms a part of a wider critique of the effectiveness of the transfer of key technologies from the scientific forecasting community to the practitioner audience.

A minor theme in the specialist literature on forecasting has been an examination of perceived gaps between ‘best practices’ developed and promoted by the academic community and practices observed within firms (Mahmoud et al., 1992, Fildes et al., 2003). Much of this literature follows a similar pattern to the positivist IS literature: researchers have proposed checklists and other tools to help forecasters and the organizations they serve to identify and avoid causes of failure (e.g. Armstrong, 1982, Moon et al., 2003). This position has led to avenues of research that seek to mitigate what are perceived as common errors in practice. Researchers have proposed, for example, mathematical interventions that second-guess human forecasters (e.g. Daveydenko et al., 2010), and software designs that guide and educate the user as he or she produces forecasts (Fildes et al., 2006). More recently, however, some research has suggested that the widespread deviations between academic theory and practice

cannot simply be dismissed as failures of good sense, but must have some, as yet unidentified, rational motive (Fildes et al., 2003, Lawrence and O'Connor, 2000).

The central question the research project described here addresses therefore is how practices understood as successful, rational and beneficial by the organization could be construed as irrational and wasteful by organizational outsiders. This question of success/failure will be examined through an analytical lens taken from Habermas' ideas of communicative action and lifeworld/system (Habermas, 1987). This research proposes to explore the relationship between the lifeworld of forecasters in an organization and the generalized systems proposed by the scientific forecasting community, and how the interaction between these lifeworlds and systems produces narratives of success and failure.

In his book *A Theory of Communicative Action* (1987), Habermas contrasted different idealized forms of rationality: technical rationality, which is geared towards strategic and instrumental action; and that geared towards a predominately consensual mode of co-ordinating action, which he calls practical rationality. Habermas uses the term 'lifeworld' (p. 126) to describe this latter form of reasoning, and refers to the former as 'systems' (p. 82). In the lifeworld, participants are required to submit claims they make about the world to the judgement of their peers, defending and explaining their claims in order to confirm their legitimacy. Systems emerge when these rules are partially relaxed. Systems represent a legitimation of certain types of claims, based on a shared understanding of their defensibility. Habermas argues that a crisis occurs in societies when these systems become decoupled from the lifeworlds in which they originated, and begin to colonize lifeworlds where the underlying legitimacy of the system has not been demonstrated.

This research proposes to explore this approach as it applies to the success/failure of forecasting at a case study firm. It will argue that the firm's forecasting practice was a lifeworld partially colonized by the instrumental rationality of the system of forecasting as encoded in a forecasting support system. The differing views of success and failure emerge from contradictory perspectives on the case study firm's ability to preserve elements of their lifeworld: for the firm, this represents a successful implementation that permitted consensual forms of rationality endure; for forecasting

researchers, this represents a failure to fully translate their own consensus into an organization

This paper will first introduce the case study firm, and the divergence between internal and external narratives that emerge from this description. This will be prefaced by a short description of the data collection phase. The paper will then conclude by briefly introducing outlining future work to explore these ideas with reference to the case study.

2.0 Methodology

A combination of qualitative and quantitative data has been collected from a large manufacturing firm in order to develop an interpretive case study, intended to provide a rich picture of a forecasting support system in practice (Walsham, 1995). Qualitative data collected includes a set of semi-structured interviews with two employees directly responsible for forecasting, known in this firm as logistics managers, and forecast users, including managers from finance, marketing, sales and the supply chain. In total, these interviews produced approximately seventy pages of transcribed text. Additionally, researchers were permitted to observe and record discussions at routine forecasting and planning meetings between forecasters and other interested parties within the organization. Quantitative data collected included a sample of 3264 forecasts provided by the company for which the actual outcomes were known.

3.0 Case study

TruMed UK (a pseudonym) is the UK subsidiary of a large conglomerate in the pharmaceutical sector. Some years ago the firm purchased a piece of software of a type generically known as a “forecasting support system” (FSS), which it has used continuously since implementation. Users of this system (forecasters) attempt to predict future demand for the organization’s products in the short-to-medium term. Forecasting outputs are typically used by the firm to make decisions about production planning, inventory management and distribution.

Forecasts were the responsibility of three logistics managers based in the supply chain function. They produced forecasts for about 350 different stock keeping units (SKUs), as well as managing the associated inventory. Forecasts were produced every month,

looking ahead two months, and in theory organizational practice followed a well-defined process, consisting of three distinct phases: data cleaning, analysis and forecast production, and adjustment for managerial intelligence.

‘Cleaning’ the dataset involved removing errors and known inconsistencies from the sales history. In the analysis phase, forecasters attempted to identify patterns and trends in demand and extend these into the future, creating forecasts for the next several months. Finally, forecasters made adjustments to these outputs to reflect managerial intelligence (MI) that historical data could not capture, such as product promotions, competitor actions or anticipated changes in macro-economic or regulatory conditions. The effectiveness of TruMed’s forecasting process was measured by statistical accuracy, or the degree of correspondence between forecasts and actual outcomes.

Historically, the analysis and forecast production stage had been a rather laborious manual process. Forecasters used generic spreadsheet software and produced hand-drawn graphs and diagrams to present, discuss and amend forecasts in regular forecasting meetings. One of the logistics managers observed that the new FSS was intended to “take some of the drudgery out of the task” of producing forecasts. The new package was chosen by a group of middle managers in consultation with both forecasters and forecast users. It was particularly praised by sales and marketing managers because of the ease with which managerial information could be integrated into forecasts.

The package chosen by TruMed UK was fairly typical of off-the-shelf forecasting software. It consisted of a combination of a database which contained a sales history and a set of statistical algorithms for analysis. Although specialist application training was available from the software vendor and more general training on statistical forecasting methods was widely available in the UK, none of the three Logistics Managers had undertaken any specific training related to their forecasting role.

At the time of this study, with the system fully implemented, at least eighty person hours were dedicated each month to producing, modifying and validating forecasts within the firm. Much of this time and effort was concentrated on the integration and validation of managerial intelligence into what were known as “base-line” or “system” forecasts. Lengthy meetings would be conducted to reach agreement on

adjustments to the system forecasts, presented on screen for meeting participants through the graphical facilities of the software.

When prompted, interviewees could enumerate a number of minor issues with the software, but by and large it was described as a valuable and appropriate tool for the task of forecasting TruMed products. The FSS was said to be an integral part of the firm's improved, more rational forecasting process, and was thought (though without empirical evidence) to have improved forecasting outcomes overall. When prompted, forecasters suggested that forecast accuracy at TruMed still had room for improvement, but there was little appetite in the organization for changing the FSS or the manner in which it was used.

In practice, however, TruMed's forecasting practices blurred many of the lines between tasks in the forecasting process. In particular, the method of producing the initial "system" forecast in many cases deviated from the stated methodology. Forecasters would often obtain a statistical forecast from the software but then make multiple, time-consuming adjustments to make sure that the forecasts "looked right". It was claimed this was done because important elements of consumer behaviour could not be captured by statistical methods. These adjusted forecasts were then presented as "system forecasts" at the related forecasting meeting, even though they bore little relationship to the statistical forecast initially produced.

The use of the facility for adjustments based on managerial intelligence also varied substantially. In one meeting, system forecasts – both authentically system-generated and adjusted – were again overwritten on the advice of an experienced product manager to "look right" in accordance with her perception of the market. Forecasts in another product area were subject to close scrutiny by meeting participants and adjusted for perceived micro-trends in the quantitative data.

To investigate the impact of these adjustments to the forecasts, a set of control forecasts was generated using a similar piece of off-the-shelf software and compared to the outputs provided by TruMed and the actual figures for the same time period. Although space does not permit a thorough analysis of the results in this paper, essentially this review found that (a) forecasts adulterated at the "system" phase were not on average significantly improved by the additional person-hours of work involved (11.74% error as compared to 12.0% error); and (b) while the average

accuracy of forecasts adjusted for management intelligence was an improvement (14.3% error as compared to 17.3% error before MI adjustments) only about half of the forecasts were improved. The remainder either remained approximately as accurate or actually worsened as a result of adjustment, particularly when the adjustment was relatively small.

In implementation in TruMed, therefore, it is not at all clear that this FSS has been a success from the perspective of scientist/forecasters observing the use of the underlying technology. Forecasters in TruMed made unintended use of the adjustment process to introduce data into forecasts that was, by these standards, neither legitimate, nor, analysis suggests, necessary, and claimed this as the output of a rational, statistical process. Perhaps worse, from the perspective of the forecasting scientists' ideal system, is that as much as half of the considerable spent adjusting forecasts was spent making them worse, or at best no better than before. To the canon of the forecasting literature, the situation at TruMed was largely explicable only by suggesting that the organization suffered from mismanagement and/or a want of proper forecasting education. The organization would be urged to undertake an audit of their practice, and make haste to introduce reform and improvement. Yet, this need for improvement that forecasting scientists could readily identify was not at all apparent to members of the organization.

4.0 Future Work

The task that lies ahead in this research project is to try to reconcile these divergent narratives; to understand how this technology as it is used in TruMed can be understood both as a success within the firm and as, at best, a corrupted mediocrity by forecasting scientists.

In order to do so, we have a number of key issues to explore through the lifeworld/systems lens that Habermas has proposed. First, we plan to explore the lifeworld of TruMed's forecasting practice. A critical point will be to establish the ways in which claims to truth about the future demand for TruMed's products are expressed, challenged and defended within the firm, noting that in this well-established practice a number of Habermas' 'short-cut' systems are likely to have taken root. Our next task is to examine how the forecasting support system, which we

would characterize as a decoupled system intentionally deployed to colonize forecasting practices, impacted upon TruMed. We suggest that the diffusion of the forecasting support system is viewed as a success by the firm for precisely the same reason as forecasting scientists regarded it as a failure: the forecasting support system was not able to fully colonize forecasting practice. The expectation of forecasting scientists that outputs from the system would have a short-cut to legitimation because of the inherent rationality of the means of their production was disappointed. For actors within the firm, the preservation of the practical rationality of their lifeworld, which permitted them to challenge and effect change in system outputs, was the basis of their belief in its success.

Clearly this research, once complete, will be subject to certain limitations. It relies on a single case, and therefore has the usual problems of generalizability. Moreover, there are inherent difficulties in translating Habermas' idealized notions of lifeworld/system into empirical contexts. In particular, this research faces the problem of whether lifeworld/system elements can authentically be distinguished from one another in an empirical setting, and whether an organizational activity of this type can ever be described as an "ideal speech" situation, in which genuine attempts are made to reach consensus. However, it is hoped that this research will engage with fruitfully with these issues, and suggest directions for future research that may further resolve these difficulties.

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