

Exploring the Perceptions of Information Technology Support for Road Haulage Companies: A Qualitative Interview Study

Carl Magnus Olsson

Viktoria Institute

405 30 Gothenburg, Sweden

Phone +46 31-773 55 37, Fax +46 31-773 55 30

www.viktoria.se/~cmo

cmo@viktoria.se

Abstract

This paper outlines the results from qualitative interviews with twenty road haulage companies, as a part of the diagnosing phase of an ongoing action research study exploring systems support needed by road haulage companies. The empirical data is placed in the theoretical framework presented by Orlikowski & Gash (1994). This has provided a focus on three aspects – (1) road haulage companies are concerned about investing in inadequate technological solutions, even though they realise the potential benefits that success could bring, (2) road haulage companies see strategic advantages with solutions that have been invested in, and (3) they are optimistic about the future use of the systems as well as the benefits granted. Still, most road haulage companies are found pondering the nature of technology rather than trying to gain strategical advantages through technology and thus only a few reap any profits of successful implementation and useage that strengthen their position in the value chain. It is further speculated that this “better-safe-than-sorry” approach might give a “safe-and-sorry” result for overly cautious road haulage companies.

Expected contribution of this paper is to supply insights to the everyday life of road haulage companies and the hard pressed context in which they do business.

Keywords

Road Haulage Companies, IT Support, Technological Frames

1. Introduction

This paper focuses on the road haulage industry and its perceptions of IT support. Fighting narrow margins, road haulage companies (RHCs) investing in new technology may have urgent need for immediate payback in order not to jeopardize the future of the company. Needless to say, failed systems integration is not the way to go if you want to stay in business as a road hauler. The level of computer system competence among RHCs is not ideal, as many small firms are considered fortunate if they have a few older computers to work out salaries and check e-mail. To this strained situation we may add that although many new and exiting possibilities have presented themselves, the poor reputation that failed implementations have brought makes the situation a challenge for new solutions, no matter how brilliant they may seem. Opportunities are arising to help RHCs though. As vehicles have become more and more digitally managed, new possibilities have presented themselves when integrated with telecommunications. Together, the digital vehicle and

telecommunications form a strong force that may considerably help the road haulage industry (Juliussen & Magney 2002).

Specifically, this paper sets out to identify perceptions of IT support for RHCs. Technological frames (Orlikowski & Gash 1994) are used to provide insight on possible taken-for-granted notions of technology, in an attempt to make sense of what these perceptions might imply. The paper is a part of an on-going action research study (Susman & Evered 1978, Baskerville & Wood-Harper 1996) that explores systems support needed for RHCs.

The remainder of this paper is structured as follows: Section two covers the theoretical framework of Orlikowski & Gash (1994) and the relevance of that framework as a sensemaker of IT. Section three outlines the method used when conducting this study and section four goes on to present the empirical data of the interviews. Section five contains the discussion of empirical results and the paper is rounded off in section six by a summary of conclusions that may be drawn.

2. Theoretical Framework

For RHCs, the narrow margins of their hard pressed business and low level of IT experience and understanding presents a problem when IT support systems are considered. It is clear that better sense needs to be made out of the available technology as well as the context within which this IT is intended to operate. An ambitious attempt to theorize the sensemaking process of technology has been made by Orlikowski & Gash (1994). They argue that much understanding of how technologies are developed, used and changed can be obtained by examination of taken-for-granted notions of technology in organizations and that it is critical to understand people's interpretations of this, in order to gain insight into how they interact with IT in organizations. They highlight what they mean by quoting Weick (1990, p17) in saying "...cognition and micro-level processes are keys to understanding the organizational impact of new technologies." In their argumentation for technological frames as sensemakers for IT in organizations, Orlikowski & Gash (1994, p176) use the term *frames* to indicate "...assumptions, knowledge, and expectations, expressed symbolically through language, visual images, metaphors, and stories."

These technological frames may both work as enablers and constraints and are shared among members of communities, even though each member may have an individual interpretation of the frame. Orlikowski & Gash (1994) note that they borrow the view on shared frames from Wittgenstein's (1953) family resemblance, in which each individual shares a frame if some core cognitive elements such as assumptions, knowledge and expectations are similar.

Technological frames are used to indicate the subset of assumptions, expectations and knowledge that the members of an organization have regarding technology in their shared context, including technology itself, as well as effects of technology in a specific situation, place, time or project. The distinction from frames in general is made by Orlikowski & Gash (1994) in order to analytically focus on particular interpretations of technology and its role in organizations rather than also include the more typical focuses on strategy, innovation or change management. It may be noted that technologies are considered by the authors as social artifacts that have a material form and function that is embodied by the values, priorities and understanding of technology of sponsors and developers. In their study, Orlikowski & Gash (1994) identified three domains which characterize the different interpretations of technology. These are (1) the *nature of technology*, referring to the general understanding of technology and the capabilities and functionality of it; (2) the *technology*

strategy is discussed as the view people have of their organization's reasons for implementing the technology, including the understanding of the vision behind the adoption and the value it may give the organization; finally they identify (3) the *technology in use*, referring to the understanding of how the technology is supposed to be used in an every-day situation and what this means in respect to conditions and consequences of that use.

3. Method

This specific paper is positioned in the diagnosing phase of an ongoing action research study (Susman & Evered 1978, Baskerville & Wood-Harper 1996). Results of this paper are based on semi-structured interviews of twenty RHCs. Walsham (1995) outlines three areas that researchers should take an active stand in when conducting investigation within the interpretive tradition: (1) the use of theory – in this work as a part of an iterative process of data collection and analysis, since this also serves the cyclic nature of the action research study this paper contributes to, (2) the role of the investigator – in this case an involved researcher, motivated by the active part of the researcher in the surrounding study, and (3) the generalization of results – in this paper intended to provide a rich insight to the everyday situation of the respondents rather than development of concepts, generation of theory or pointing to specific implications. The position of this work in the diagnosing phase of the main study made the decision to present a rich insight reasonable.

The interviews have been codified as R1 to R20. Respondents were selected based on a fundamental interest in IT and the interviews lasted between one and two hours. During the interviews, most RHCs were enthusiastic about the fact that someone came to listen to what they had to say. It may be noted that the vehicle fleet of the respondents varied from ten vehicles to almost six hundred. The type of goods also varied among the respondents.

4. Perceptions of IT Support for Road Haulage Companies

4.1 Nature of technology

Referring to the general understanding of technology and the capabilities and functionality of it, four primary areas are seen: (1) a positive but passive stance, (2) a low level of IT awareness, (3) a belief that increase in size bring an increased need of IT support and (4) RHCs are aware of the cost aspect involved.

A complex relationship to IT is generally found at the respondents – conceptually they are positive but still they are passive in action. The main reason R14 started investing in IT anyway was because their main customer was perceived as very keen on IT support. They still express caution, though. Fast development of new technology adds to the passive stance on IT investments. Many instead share the “better-safe-than-sorry” approach of R13 and keep a close look at their competitors to lessen the risk of making a premature investment.

“We believe in IT.” R14

“We have always been negative to [IT investments].” R14

“We have always been worried – you know, the development goes so
R14

“You look at what others do – on the mistakes they make and so
R13

This passive stance may at least partially be explained by a low level of IT awareness, and a need for additional understanding of what to make out of technology. RHCs often have a history of working in almost the same way for the last 30 years or so, with virtually the same equipment. An effect of this tradition of slow change is a strong contrast to the rapidly growing number of new hardware and software, causing many to doubt the life-span of systems.

“The IT awareness level is not very high.” R18

“IT systems... feel very insecure to obtain.” R18

“Sure, there are systems – they pop up and then they are gone.” R4

A common ground shared by all respondents is a belief that larger companies have greater need for IT support.

“During the time the company grows, you have to have technology for this as well.” R2

Awareness of cost was generally high at the respondents, which is understandable because of their hard pressed financial situation. Regarding the cost of new systems, the general opinion is that hardware and software involved for in-vehicle use has to be low since it will be implemented in many vehicles, thus making the total high. Awareness of the need for adaptation and the cost involved with this was also found, although for instance R14 had learned this the hard way when they believed that the system they invested in would run without any real adaptation since it was sold as an off-the-shelf product. Finally, the many vehicles in road haulage fleets also put ease of maintenance and costs in focus.

*“Everything needs adaption – that’s the heavy part.”*R14

*“The hardware in itself could probably cost more, but the thing that must not cost more is the maintenance.”*R4

4.2 Technology strategy

As an effect of the strained financial situation of RHCs, the general consensus is that technology may be used as a tool to reduce costs. Reducing cost is by many considered the more feasible way to increase profit, rather than trying to increase turnover. Five main areas where technology is perceived as beneficial are: (1) reducing administration, (2) better support for drivers, (3) better support for fleet managers, (4) increased control over income and cost and (5) strengthening of their position in the value chain.

The reduction in administration is clearly described by R2 when they reflect upon their organization prior to the in-house development of a backbone system, as well as by R14 in their comments on the ever unpopular manual handling of freight receipts, which causes much administrative work as well as problems with freight receipts that disappear, often due to many papers and constant moving in and out of the vehicles – it is easy to lose the one evidence of a job done.

“We suffered from an incredibly heavy organization [with] a gruesomely heavy administration.” R2

“The freight receipts are still around, which I feel is completely idiotic. --- It is still only a receipt we are talking about. --- We wanted just bar codes.” R14

When asked about navigation services for drivers, a majority of the respondents feel that GPS in vehicles is useless today since the areas they operate in is often represented by a large grey spot on the maps, indicating industrial area, with no detailed information whatsoever. Furthermore, map support for weight restrictions, environmental restrictions and height restrictions is still to be developed. Integration with area specific systems at for instance docks is also non-existing today.

“I think maps and such in vehicles, if you look ahead five years, will
R13

“I think much of this will be supplied with the vehicles in the future.”
R14

The use of GSM mobile phones is extensive as a way to communicate with the drivers, at virtually all respondents. Driver to driver communication is also frequent, both for social reasons and for business reasons. Older technology such as short wave radio is still present, but the primary channel for communication is now mobile phones. The advantages of mobile phone are seen as significant, even though the communication costs are now running high. Alternatives such as SMS to convey customer orders are used at R4, who have also restricted the outgoing calls for their drivers so that just a few drivers under special conditions may call from their phone. At R7, a policy stating that any call over three minutes is considered a privat call is used. Only R8 felt that the communication costs were in no way in need of a more cost-effective alternative, since a single SMS cost them approximately two minutes of talk and they felt that so much more was possible to convey in that time than is possible to fit in an SMS. It may be noted that although communication costs were high, R9 felt very strongly that the social effects of having mobile phones and communicating a few extra minutes was very important for the well-being of drivers often alienated from their surroundings since they spend so much time alone in their vehicle. By restricting the use of mobile phones, R9 felt a clear risk that the drivers would need to make up for the need to talk at other times during work or that they would simply start to feel less committed to their job and possibly even start disliking their job.

When discussing the support for fleet managers, services such as positioning of vehicles do exist at a few of the respondents and is recognized as useful, though most fleet managers directing orders and traffic keep information on who is supposed to be where in their head. GPS is described as having potentially beneficial effects when planning what driver should take which order, but that it would also enable better customer service.

“When you are sitting with the customer on the phone it would be elegant to be able to say that we are there in ten minutes, but from my horizon it is from a planning perspective that it is good.” R2

Only two respondents did not see fleet managers as the primary role in need of IT support. These two respondents have customers that enable planning of orders several weeks ahead and seldom involve day-to-day changes and coordination. For the other respondents, this vital role – recognized as the key role for generating profit – has a stressful environment with new matters constantly

arriving in need of attention and good decisions. Customers are to some extent also placing their orders closer and closer to the day that the job is needed, again adding to the stress level.

“I’m completely in the hands of the fleet manager.” R14

“Fleet managers today have a very stressful job. --- They spend three to four hours a day talking to drivers.”R18

“Then [the customers] call in during the day and then it is [order coordination] on minute basis, or real-time as we say.” R18

Closely related to the support of fleet managers is the need for better control over income and cost. Attempts to meet this need are primarily through the development of light-weight Excel applications to bridge the most immediate gaps. R2 also uses such an Excel application to stimulate employees into reflecting on financial issues and not just making decisions based on feeling. The primary use of this application for R2 is before submitting an offer to a potential customer and includes data from a test drive of the route. One service which none of the respondents have and all expressed very high interest in when asked, is a way for fleet managers to see likely financial results if a certain order is placed on a particular vehicle and driver when coordination is done. Although a rough feeling of what likely is good business and what is bad, this is today mainly based on assumptions and only in some occasions simple calculations. In addition to this, fleet managers at companies who handle goods that require special licenses to drive, state they have a need for systems support to match drivers, licenses and goods when they coordinate orders.

*“As it works today, much is based on feeling. --- Where does the wind
R10*

*“The type of system in which you can follow-up income and cost –
that’s what’s interesting, at least for us.” R10*

Many RHCs cooperate with one of the two dominant haulage contractors to supply them with customers. The credit invoicing used by these haulage contractors is accepted but not appreciated by RHCs. Although it is nice not having to send out invoices after each job, credit invoicing hinders RHCs from having easy (if any) insight into how much they stand to make from a certain order. Instead they receive payment about a month after the job was finished and any verification that all jobs have been paid for is up to the RHCs to do. Such verification is usually done manually where all freight receipts are simply matched with what has been paid for. Needless to say, not all RHCs do this since a single days work may render 20-100 receipts or more, depending on the size of the fleet and number of customers and shipments they supply.

An alternative approach to the perceived strategic capabilities of technology has been taken by R14. By monitoring the current supply that customers to R14’s customer have, R14 have move from being a traditional road hauler to a service provider in addition. This has been achieved with a mix of organizational change and use of currently available technology and was initially intended to eliminate most of the risks for mistakes or misunderstandings which previously had been a problem. R14 now experienced a somewhat unexpected result of this change:

“I feel that order reception has played out its role.” R14

Although they are in effect working for others in monitoring and maintaining the supply chain they have not been able to charge for this work. The main advantage is instead perceived as better customer value. Since orders are now placed by fleet managers who have extensive insight into

vehicles and drivers available, the risk for misinterpreted need is reduced. The number of interim contacts where information may be misunderstood has also been reduced and customer need for emergency jobs have decreased by the automatic supply monitoring. Altogether, these factors have made planning of jobs much easier and the everyday life of fleet managers more pleasant, at the same time that the company has strengthened their position in the customers' value chain.

4.3 Technology in use

Experiences from implementation of IT support and the effect on every-day-life, as well as consequences brought on by this, were in this study described by (1) a positive attitude towards the use of IT support, (2) some unexpected interest in new technology implemented, (3) a need for system integration with other IT solutions, and finally (4) some cases of forced implementation.

In spite of the known failures, the respondents still have a positive view on IT support. In order to better understand if new technology should be used (or developed), many RHCs use light-weight Excel applications to bridge the most immediate gaps and to try out what might potentially be good solutions. Some of this positive view likely comes from the fair share of success stories that are also told, as with R2 where the investment payed off in less than a year – much earlier than anticipated. At R18 the in-use effect of the digital order handling system greatly surpassed financial prognoses as well as expectations that users had.

“Yes now it is nice – it was rather much work though.” R2

“We wanted to test if this is something we want to work with. --- We may later integrate this into [the backbone system].” R2

*“Since we saw the benefits so quickly we now wonder why we waited
R18*

R14 did point out that one of their drivers unexpectedly turned out to be very interested in the IT support they implemented in their vehicles and that he now frequently tweaks the system to behave in a better way. He also shares his experiences and helps other drivers with their devices in an effective way. During the study, some companies expressed strong feelings for customized solutions while others argued for standard off-the-shelf products that enabled them to discover new uses as they go along.

“It is an advantage if the systems know more than we use. --- We learn more and more about what we can do on a weekly basis, almost.--- A good helpdesk – that is important for us.” R18 argues for the opposite approach of R2's in-house development.

This need for integration with other systems was shared by almost all other respondents. At R2, the economy system used is separate from the self-developed backbone system, as the economy system is shared with their international sister companies as well as the mother company. These two systems have now been integrated to further the value of each system for R2. The digital ordering system used at R18 is currently not integrated with the vehicles, something which they very much would like to see.

“Everything is online now... so when we create an invoice it is automatically registered in the economy system as well.” R2

“There are so many synergy effects of [the integration].” R2

“We have got the entire order handling digital – why not send this to the vehicles? --- We waited for the offer [from their provider] for six months and then we [gave up].” R18

When it comes to user acceptance, some cases of forced acceptance were encountered. Usually this was systems forced upon drivers. The drivers of the R2 fleet clearly did not like the scanning equipment that they now have in order to read bar codes at each stop, which is needed as input to the backbone system. Since customers otherwise had a habit of protesting that drivers had not been at their location, the system was nonetheless vital to implement. When customers now call in to complain, fleet managers are able to answer with an exact time that their location was served. The scanning also serves as a reminder to the drivers when they submit the data collected during their route to the backbone system, since their route is automatically checked to make sure they did not forget any location. This reminder also makes for an increased quality of service to the customers and in return makes the drivers more appreciated by the customers. A further effect that R2 admitted was that the new backbone system had forced them to make adjustments on who does what. R14 also forced their drivers to use the digital time schedules of their in-vehicle system, since this saved much time when administrating the pay-roll each month.

“No, they did not like that – it is another element that they had to
R2

“If you are not interested in computers you may all of a sudden be
R2

“They simply have to learn.” R14

4.4 Discussion

In this study, RHCs have expressed hesitation to invest in IT support, even though they have a belief that IT can help them. The problem is a strained financial situation combined with little experience from implementing IT solutions. The rapid arrival of new hardware and software also makes it hard for RHCs to make sense out of when to make an investment, especially since they are aware of the large amount of adaptation needed and the high maintenance costs that have to be paid. Instead of taking any risks, many RHCs keep on going the same way as before, while trying to maintain an eye on competitors and their failures with IT support systems. When and what to invest in is not easy even for those well versed in IT solutions, so RHCs who have conducted business in much the same way for at least the last thirty years are likely to continue to be passive and careful with new technological support systems.

The strategic capabilities of technology to reduce administration have already been seen especially in larger RHCs. Whether or not to buy off-the-shelf products depends on the focus and needs of the individual road haulage company. No matter which solution is chosen, a great deal of adaption is likely to be needed. Technology is suggested as a good way to ease the burden of fleet managers in particular, though in-vehicle support for drivers is also interesting. For administrative personel, fleet managers and drivers, an integration of order handling systems with in-vehicle systems, economy systems and context dependant systems is important. Excel spreadsheets before submitting offers, order placement without clear insight on how to make the most money out of each job and manual, if any, follow-up afterwards is simply not good enough. Integrated new technology is seen as a possible way to bridge this gap. For the drivers and those who handle administration, the most

immediate change that technology could bring is to do away with the paper based system of freight receipts and introduce bar codes and digital signatures instead. The strategic capability of technology to give improved control over income and cost, which is an everyday struggle for many RHCs, is also identified by the respondents. In-house development of a wide range of Excel applications to do this help to some degree but without integrating the independent systems of today it is still hard to keep track of income and costs. RHCs that get their customers from haulage contractors using credit invoicing have further reduced control over income and cost, since the credit invoicing does not support day-to-day or order-to-order follow-up or control. Communication costs are also currently running high and social aspects like the well-being of drivers and feeling as part of the company make restrictions such as forbidding outgoing calls seem like short term solutions only. Finally, one of the respondents had actually taken on a different role in the supply chain by expanding the service for their customers to include overview of the supply levels at the customer's customers. In that, the road haulage company had moved from its traditional role to a service provider, thus strengthening their position in the value chain.

The perceptions of technology in use and its effects on day-to-day work show optimism among many of the respondents. All systems have not been a success, but as a whole the RHCs seem to wait for opportunities that make sense to them, constructing light-weight Excel applications to address the most immediate needs and to try new ways to conduct business. Some forced implementations were encountered and some cases where unexpected interest in the new technology were identified, but altogether the technology that makes it into RHCs seems to be there to stay. The financial effects of investing in IT support actually surpassed the expectations of two RHCs, making them ponder why they had waited so long before committing themselves to IT support.

At this point, I would like to take a moment and speculate on the "better-safe-than-sorry" approach that most RHCs adhere to. Are there no risks with that approach? Is it as safe as it sounds, or could it be that a "safe-and-sorry" result might be yielded? Is there no risk of ending up with a weaker position in the value chain if others can offer what you can not? As a road haulage company, you may find yourself struggling harder to survive, now with even less profit margin with which to finance implementation of IT support, as well as trying to regain any customers that abandoned you when you could not offer the same service as others. In other words, the risks may not only be associated with investing in IT support, but also in *not* investing. It could just be that the risks of not investing are old to RHCs, and thus do not appear quite as frightening.

4.5 Conclusions

Initially, this paper set out to identify perceptions of IT support for RHCs. Technological frames (Orlikowski & Gash 1994) were used to supply insights on any taken-for-granted notions of technology, in an attempt to make sense of what these perceptions might imply. The technological frames have provided a focus on three major aspects – (1) RHCs are concerned about investing in inadequate technological solutions, even though they realise the potential benefits that success could bring, (2) RHCs see strategic advantages with solutions that have been invested in, and (3) they are optimistic about the future use of the systems as well as the benefits granted. This means that RHCs hope to use new technology to strengthen their position, but that they are afraid of investing in inadequate solutions that may jeopardise their existence.

By looking at the three domains that characterize different interpretations of technology, it is apparent that RHCs are primarily found pondering the nature of technology and the inherent potential, rather than exploring the technological strategy or technology in-use. Only a few have started investing and adapting new technology while the rest are watching them, considering the possibilities and risks involved. It is further speculated that this “better-safe-than-sorry” approach potentially could give a “safe-and-sorry” result instead. In order to help them gain a stronger position in the value chain, RHCs could take a good hold of any and all tools and sources of help that they may know of (research being one), to try to and overcome any struggles with implementing technology.

References

- Baskerville, R. L. and Wood-Harper, A. T. (1996), A Critical Perspective on Action Research as a Method for Information Systems Research, *Journal of Information Technology*, 11: 235-246.
- Juliussen, E. and Magney, P. (2002), Worldwide Telematics: Regional Markets and Forecast, Executive Summary, viewed 29 September 2002, <http://www.telematicsresearch.com/PDFs/WW_ExecSum.pdf >
- Orlikowski, W. J. and Gash, D. C. (1994), Technological Frames: Making Sense of Information Technology in Organizations, *ACM Transactions on Information Systems*, Vol. 12, No. 2, April 1994, Pages 174-204.
- Susman, G. and R. Evered (1978), An Assessment of the Scientific Merits of Action Research, *Administrative Science Quarterly*, December 1978, Volume 23, Pages 582-603.
- Walsham, G. (1995), Interpretive Case Studies in IS Research: Nature and Method, *European Journal of Information Systems*, 4, 74-81.
- Weick, K. E. (1990), Technology as Equivoque: Sensemaking in New Technologies, *Technology and Organizations*, Jossey-Bass, San Fransisco, Calif., 1-44.
- Wittgenstein, L. (1953), *Philosophical Investigations*, Macmillan Press, New York.