Exploring the effective use of Self Rostering: A contingent approach

Master Thesis Business Administration

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SUMMARY

Self rostering is an innovative work time scheduling system that is premised on meeting the growing demand for an individualized approach towards managing human resources in Western Europe. Despite the system's acknowledged advantages, it has been noted in literature that inconsistencies in its prevalence and effectiveness exist. These inconsistencies are characterized by- the failure and success of the work system once implemented; and the difference in magnitude of the work system's adoption in the health sector and the manufacturing sector. This stimulates one to probe (i) what makes this system effective so as to cushion the unpredictability of the outcome of implementing self rostering as well as to (ii) discover why the work system seems to show a higher prevalence in the health sector than the manufacturing sector so as to discover how applicable it is in different sectors.

This research investigated this problem by exploring the factors which affect the effectiveness of self rostering thus seeking to bring to light a set of factors that would serve as a guide to organizations that wish to implement the self rostering work system. In addition to this, the research tried to find out whether the found factors were more prevalent in the health sector and thus the reason for the higher magnitude of self rostering in that sector.

Method

These factors were sought by using both secondary data in the form of literature review and primary data in the form of qualitative expert interviews to confirm and add to what was found in the secondary data.

Results

The findings from both secondary and primary data revealed that some factors assumed by current literature are viewed as insignificant by practicing experts, while others were duly acknowledged as determinants of effective self rostering. Further, the research also brought to light new factors that were proposed by the experts. The following were the factors that arose in the research:

- Factors based solely on literature- Gender and Organizational structure.
- Factors assumed by both literature and experts- External environmental pressures; the adaptation period; Type of employee; Type of manager; Size of the self rostering group; Organization's power relations; Level of collegiality; Individual focus; Employee's level of knowledge about the self rostering system; Heterogeneity and homogeneity within the self rostering group.
- Factors based solely on expert opinion- Adequacy in communication about how the system works; Initial employee acceptance of the work system; The use of a pre-pilot and post-pilot measurement scheme; Gradual introduction of the system; Availability of supportive self rostering technical solutions/ software.

All the found factors were considered as factors that affect self rostering in general and thus were important for any organization intending to implement this system irrespective of the sector.

However, despite acknowledging the found factors, the research through expert interviews also discovered that the prevailing higher magnitude of self rostering in the health sector does not imply that this sector has more of these found factors. Nevertheless, this higher prevalence is a result of a somewhat larger demand for attraction and retention mechanisms and an existing individualistic culture in this sector which has led to a mere faster progression rate of the system's adoption.

Conclusion

The factors raised in the research were conclusively regarded as essential for organizations that intend to achieve effective results upon implementing the self rostering work system. However, these factors are helpful in explaining the effectiveness of the work system and not its adoption. Therefore, they cannot be directly associated to the higher prevalence of the work system in the health sector as this sector boasts a higher magnitude of the system's adoption but also faces effectiveness problems due to the lack of the given factors. It was thus concluded that self rostering effectiveness is achievable in other sectors such as the manufacturing sector for as long as the factors raised were present but was merely higher in prevalence in the health sector.

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ABBREVIATIONS

AWVN- Algemene Werkgeversvereniging Nederland

FNV-   Federatie Nederlandse Vahverenigingen

KLM-   Koninklike Luchtvaartmaatschappu

NS-   Nederlandse Spoorwegen

1. INTRODUCTION

1.1 From collectivism to individualism

Many authors have shown that Human resource management has over the years been experiencing shifts in its approaches to achieving goals, aimed at improving its effectiveness. These shifts are seen as part of an innovative endeavor in this management function, which is inevitable in an increasingly dynamic business environment. An outstanding shift has been that of the transition from collectivism to individualism in Employment Relations. This shift has facilitated for a number of other changes in the Human Resource Management field due to its fundamental and deterministic nature.

Collectivism which means having a centralistic approach to decision making, partly due to a government influence, uniform regulations, and institutional integration has proven to be decreasing in Western Europe. Individualism on the other hand, which is defined as the extent to which personnel policies are focused on the rights and capabilities of individual workers" (Purcell, 1987: 533), is on the increase in Western Europe. The transition is noted from various sources (e.g De Leede, Looise and Van Riemsdijk, 2004; the Workplace Employment Relations Survey data, 2004; Storey and Bacon, 1993; and Brown, Deakin, Nash and Oxenbridge, 2000). Blossfeld further supports these views by stating that there is a general tendency towards individualization, autonomy and growing heterogeneity in life style and patterns of life course….individuals cannot be reduced to someone who is a passive executor of prevalent social norms or guided by instrumental rationality (Blossfeld, 1996).

The tendency towards individualization can be noted as far back as 1981 when Giddens and others pointed out that an individual's opportunity set had increased dramatically, and the larger 'palette of options' and the growing social acceptance of various life styles and values had clearly contributed to the growing diversity of life course patterns (Anxo, Boulin, Fagan, Cebrian, Keuzenkamp, Klammer, Klemmer, Moreno, Toharia, 2006). The new trends have thus reflected a transition from a relatively standardized work organization structure to more complex and diversified structures, and to a growing heterogeneity of company practices and human resource and time management (see Anxo and O' Reilly, 2000). In other words, individualism has taken many forms and this view is supported in various scientific literature. For instance, De Leede et al identified areas of individualization as including type of labour contracts, working time and leave arrangements, reward systems and performance reward, and job design, training and development (De Leede et al, 2004).

Deregulation of work time regulations and the decentralization of bargaining arrangements for determining work time is a theme in several countries, including Norway and Sweden. While employment relations literature indicates that employers have driven most bargaining on flexible working time (Arrowsmith and Sisson, 2002), there is also growing evidence that many employees want more autonomy in working hours arrangements (Thornthwaite and Sheldon, 2003). This is what has contributed to transformations in work time arrangements towards an individualized form.

One emerging form of individualization in the area of work time arrangements is self rostering. A self rostering system entails that employees can specify the shifts that they would like to work, and when they would prefer not to, while maintaining the necessary level of shift cover (IRS Employment Review, 2005). There is considerable support for self rostering, in particular, in the academic literature, and such practices are becoming increasingly fashionable in the health service in the wake of the United Kingdom (UK) government's promotion of family friendly policies (Silvestro and Silvestro, 2000). Furthermore, Bailyn, Collins and Song mention that key findings of a 2000 survey show that good employment practices make a difference, and self rostering was identified as one of these (Bailyn, Collins and Song, 2007).

Self rostering has been documented as advantageous in various literature (e.g Hung, 1992; Teahan, 1998; and Wortley and Grierson-Hill, 2003). This gives one the indication that the use of this work system would have a significant contribution to the development of effectiveness in companies which adopt it. However, although self rostering is acknowledged as a management work system, fewer companies use it to benefit themselves thus limiting the maximization of its use and the spread of its benefits. One would therefore query as to why organizations do not adopt this work system at a higher magnitude considering its perceived positive attributes that it is assumed to bring about.

One of the reasons that can be attributed to the low magnitude of the spread of the self rostering work system is its inconsistency in successful results once implemented. Literature reports that self rostering has been successful in some organizations and not in others. For instance, Hung's case study of a 62 bed unit of a large medical center indicated that self rostering brought about the following advantages: a 55 percent reduction in turnover rate for that unit, enhancement of team spirit and more (Hung, 1992). This differs from a case study carried out by Bailyn et al who investigated a hospital in which self rostering did not work because it created too much work for the nurse manager (Bailyn et al, 2007). In addition to this, self rostering has not been adopted as much in other sectors other than the health sector thus raising suspicion about its applicability in other organizational contexts. This stimulates one to query why disparities in the outcomes of implementing self rostering occur and why this work system prevails more in the health sector. In other words, it is not certain whether or not self rostering may achieve uniform results in all companies that implement it.

The gap between the ideally perceived self rostering effectiveness and the real situation that is characterized by the failure of this work system in some instances, brings about the problem of disparities in self rostering effectiveness which lack explanation.

Due to the novelty of the self rostering practice, available literature has not been rich enough to support queries about the system including the one concerning its inconsistencies in effectiveness. This encourages one to seek to reveal possible reasons for the inconsistencies noted and as such founding a basis to carry out a research on the same. How would one thus state the problem that this research is founded on? This is stated in the subsection that follows.

1.2 Problem statement: Towards an understanding of self rostering

The problem which this study addresses is that self rostering has been known to suffer some setbacks in its implementation. The effectiveness of self rostering has been known to differ among organizations. Further, its progression rate and sustainability is higher in certain industries and lower in others with subsequent differences in its impact as a system of management. There is therefore need to investigate, understand and help eliminate the causes of its ineffectiveness so that its use and subsequent benefits derived from it could be optimized.

How to address this problem

What then is the best way to unveil this hidden knowledge and thus arrive at a solution to the problem? Authors Beer, Spector, Lawrence, Mills and Walton (1984) highlight that an organization's HRM practices must fit with its competitive environment and with the immediate business conditions it faces. It is thus necessary to establish how this form of work time arrangement is shaped or influenced by different factors that distinctively exist within certain sector and company contexts, thereby comparing its applicability as determined by these factors. Inevitably, a comparative study is needed to address this inquiry.

This research therefore seeks to carry out a comparative study of the applicability and possible effectiveness of self rostering as influenced by different factors. It is necessary that the factors affecting self rostering are explored using an appropriate theoretical approach suitable for both an exploratory and a comparative study. For this reason, the contingency approach is identified as a key guide to the research and provides an important framework for analysis. According to Needle, 2004, the contingency approach focuses on the relationship between the organization and its environment. It embraces the notion that business activities and the way they are organized are products of the environment in which they operate (Needle, 2004). The term contingency was popularized in the work of Lawrence and Lorsch who wrote that organizational variables are in a complex interrelationship with one another and with conditions in the environment. If an organization's internal processes are consistent with external demands…it will be effective with dealing with the environment (Lawrence and Lorsch, 1967:157). Thus, the research will use contingency thinking to present a broad analytical framework which will enable greater insight in describing self rostering effectiveness issues.

And so why should this research be carried out and what contribution will it make to the field of Human Resource Management and more broadly to the social science discipline? The next sub section describes this.

1.3 Contribution of the research

In accounting the contribution that this research brings, it would be useful to initially outline its purpose before proceeding to explain its significance.

Purpose of study

The purpose is to explore, identify and analyze the effectiveness of self rostering and the causes that attract and sustain it or hinder its successful implementation. This study also closes the existing gap in knowledge and implementation disparities in self rostering programs.

A number of studies have identified the effectiveness of self rostering and the causes hindering its upsurge. It is not known whether it is the same causes that pull or push self rostering in and out of companies (i.e why do some companies use it whilst others do not?). Having given the purpose, one can proceed to describe the significance of the research.

Significance of the study

The significance of this study lies in its pioneering attempt to investigate the effectiveness of self rostering and to investigate the factors which affect this work system in the health and manufacturing sectors.

The research seeks to address the topic of self rostering by using exploratory methods. It is clear that the topic is under researched because most of the data concerning self rostering is found in one sector- the health sector. This is confirmed by among others, the Labour Research Department 'LRD' survey of UNISON branches which found that self-rostering in the UK occurred at almost half of the health employers that responded, but among few other employers (LRD Survey, 1998). In the same vein, Hung (1992) argues that the scheduling of a workforce receives relatively little attention in industrial engineering literature and that the importance of workforce scheduling and what it has to offer to improving motivation and operations has to be known (Hung, 1992). Therefore, it is also necessary to see how this issue is being addressed in the more mechanized and routine work sectors such as the manufacturing sector. The research thus ensures that this gap is addressed by exploring self rostering in the health care and manufacturing organizations respectively. One would therefore summarize this contribution as follows:

'The significance of this study lies in its pioneering attempt to investigate the effectiveness of self rostering and to investigate the factors which affect this work system in the health and manufacturing sectors'.

In addition to this, a number of studies have shown that varieties of structures and institutional frameworks are found in different sectors. This affects some strategic choices that companies make, such as flexible working time practices. For instance, according to Thornthwaite and Sheldon (2003) institutional factors, through works council intervention, slowed down and re-shaped the formulation and implementation of self rostering so as to improve the scheme's safeguards (Thornthwaite and Sheldon, 2003). Similarly Silvestro and Silvestro state that "as ward size increases, so does the complexity of the rostering problem, but, at the same time, the number of staff who do not fully appreciate the rostering problem also increases, thus the quality of rostering decision making is likely to be compromised, with decisions being made which do not take into account the full design ramifications" (Silvestro and Silvestro, 2000: 532). Therefore, if rostering problem complexity increases with ward size, is it not probable that the

choice of rostering approach should also vary according to other differing factors? This implicitly shows that differences in self rostering effectiveness should be expected to occur in accordance with varying contexts. Therefore, in exploring the health and manufacturing sectors, the study describes how sectoral and organizational factor differences affect the effectiveness of self rostering.

Further, due to the lack of concrete theories about self rostering, it is necessary that an explorative study of this nature be carried out so as to expose a number of issues that could serve as a foundation for a theoretical build up. According to Babbie, exploratory studies are a source of grounded theory (Babbie, 2007: 89). This proposed study is therefore a concrete slab on which a firm building of knowledge can arise in future research.

A further contribution of the research is that it explores the possibilities of disadvantages of using such a worktime arrangement. Silvestro and Silvestro mention that self rostering has disadvantages which seem hitherto to have been under estimated in various literature…it seems some differences make self rostering less appropriate for adoption and use (Silvestro and Silvestro, 2000). Therefore, the literature on self rostering practices advocates the motivational and empowering benefits of self rostering, whilst ignoring the problems of adopting such an approach in different contexts.

The perceived handicaps in past research concerning the effectiveness of self rostering in various sectors give rise to a number of questions that circle around the topic. This stimulates the emergence of the research questions noted in the sub section that follows.

1.4 Research Objective and Question

Prior to formulating the research questions, it is deemed as necessary to explicitly state the objectives of the research in order to clarify the aim of the study. The following research objectives have been formulated on the basis of the problem statement given earlier.

Objectives of the study

1. To investigate the effectiveness of self rostering.
2. To examine the role of the highlighted factors on self rostering.

In order to accurately explore the objective of the study, two sectors- health and manufacturing sectors, have been chosen for this research due to the realized difference in the magnitude of self rostering's prevalence in these sectors (see section 1.3). Therefore, the following central research question has been formulated:

"What factors affect the effective use of self rostering in the Western European health and manufacturing sectors?"

1.4.1 Research sub-questions

In order to find a potential solution to the research question, six research sub-questions have been formed to structure the research. These research questions have a certain order to build

up the research to finally reach a concrete and usable conclusion to the topic. The research sub- questions for the proposed report are:

1. What is self rostering and how does it relate to the HRM discipline?
2. What types of self rostering exist?
3. What factors promote and hinder its effectiveness according to literature based findings?
4. What factors promote and hinder its effectiveness according to practical findings?
5. How effective would self rostering be in the manufacturing and health sectors considering their factor characteristics?

How then will the above research questions be addressed? The following sub section outlines the way in which the paper will go about addressing the research questions and thereby achieving the research's objectives.

1.4.2 Outline

In chapter 2, secondary data in the form of literature review will be used to gather all data relating to the first 3 research sub questions. This section will serve as a theoretical framework and therefore a basis for the research. The framework will also be the source of initial data relating to the factors that affect the effectiveness of self rostering.

In order to complement the theoretical findings and thus strengthen the validity of the paper, the report will additionally seek primary data concerning these factors by conducting qualitative interviews with Human Resource Management professionals, who are specialists in the self rostering arena. This method shall be described in chapter 3 before its results are described in chapter 4.

The results described in chapter 4 will then be combined with data gathered in the theoretical framework to stimulate a discussion in chapter 5. This discussion will include an analysis of the differences between theoretical and practical findings, as well as an elaboration of the findings regarding the higher prevalence of self rostering in the health sector.

The report will thus be concluded in chapter 6 by clearly stating its position concerning the central research question and sub questions.

Having given the outline of the paper, the research can therefore proceed to tackle its aim.

2. THEORETICAL FRAMEWORK

2.1 What is Self Rostering?

The concept of self rostering is still not popular and thus it is not expected that it be self explanatory when one comes across it. It is therefore necessary to highlight what this concept actually implies by defining it. However, it has been noted that there have been differences in the definition of this concept as perceived in various literature. Further, some authors have even used a different concept altogether to imply self rostering. The research therefore first considers the various definitions that are currently available before coming up with its own conclusive definition.

Definition of self-rostering

Different ways to describe self-rostering

The concept scientists use in their research concerning self-rostering differs. The most common used concept is 'self-scheduling', which is used by e.g Hung (1992), Zimmerman (1995), Dearholt & Feathers (1997), Hoffart & Willdermood (1997), Teahan (1998), and Bailyn, Collins & Song (2007). Silvestro & Silvestro (2000) call it 'flexible rostering', Ala-Mursula, Vahtera, Kivimäki, Kevin, & Pentii (2002) use the term 'worktime control' and Drouin & Potter (2005) refer to it as 'flexible scheduling'. The concept 'self-rostering', which will be used in this research, is also used by Thornthwaite & Sheldon (2003) and Wortley & Groerson-Hill (2003).[1]

Creating a definition

Despite the different terminologies used by different researchers, it is noted that the descriptions of the work system being implied is similar if not identical to that of self-rostering. To be able to create one definition, the different descriptions of self-rostering used in the literature are summarised in the table below. For the sake of creating a concrete definition, both scientific and non-scientific articles[2] have been used as sources.

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[1] Where the concept 'self-rostering' is used in this report, also 'self-scheduling' and 'flexible scheduling' apply.

[2] Not all names mentioned at the "different ways to describe self-rostering" part are included in the table. Those authors that are included give a definition or a description of self-rostering in their research article. The others did not and only mention self-rostering. That is why those names are not included in the table.

Similarities between articles

Author	Definition self-rostering	Main typification
Hung (1992)	"**Self-scheduling** means employees, usually as a group, develop their own schedules." (p. 6)	- Employees choose their own work hours (scheduling working hours) - Schedule developing could be a group process
Teahan (1998)	"**Self-scheduling** may be described as a system wherein a group of staff [members] or a self-scheduling committee, when presented with the staffing needs for a particular unit or area by a manager, make their own schedule." (p. 361)	- Group makes their own working schedules on the basis of staffing needs
Silvestro & Silvestro (2000)	"**Flexible rostering** is where each rostering period is planned individually (typically 4 – 6 weeks at a time). Shifts are allocated on the basis of manning requirements which reflect anticipated demand patterns, as well as myriad other rostering parameters, including staff's preferences for off-duty." (p.527)	- Individual work schedule planning - Demand of employer and staff preferences are regarded - Scheduling shifts
Ala-Mursula, Vahtera, Kivimäki, Kevin, Pentii (2002)	"[**Worktime control** is] operationalised as perceived control over starting and ending times of a workday, the opportunities to take breaks and to deal with private matters during the workday, the scope for influencing the scheduling of shifts, the scheduling of paid days off and vacations, and the opportunities to take unpaid leave." (p. 272)	- Flexibility - Adjusting working time to personal needs - Scheduling working hours and days
Thornthwaite & Sheldon (2004)	"Employee **self-rostering** systems enable individual employees to tailor working hours to maximize their compatibility with domestic responsibilities. Such rosters would (…) allow employees to choose to work mornings, afternoons or school hours only, or some combination of different hours each day." (p. 239)	- Work-life balance - Flexibility - Scheduling working hours
Drouin & Potter (2005)	"**Self-scheduling** [is] a form of flexible scheduling in which [employees] can determine their own work hours. " (p. 72E)	- Employees choose their own work hours (scheduling working hours)
Nederlands Centrum voor Sociale Innovatie (NCSI) (unknown)	"With **self-rostering** employees design their roster along their own preferences, demands and wishes of working time and combining work	- Employees design their own roster based on their own preferences

	and private life." (p. 1)[3]	
Lubbers (2008)	"By **self-rostering** the management first decides the amount of people needed at which days and hours (demand). In addition, workers express their wishes by indicating the hours they want to work (personal work roster). [The information is inserted] in the computer, (…) which will [, in theory,] result in something beautiful, that is an ideal roster for both employee and employer." (p. 15)[4]	- Scheduling of hours - Demand and wishes of employer and employee are reconsidered - Computer could give a perfect work schedule for employer and employee
Redactie Personeelsnet (2008)	"With **self-rostering** the management first determines the amount of personnel needed at which days and hours. Then the employees express their wishes in their personal work schedule. [That is inserted in a computer and the result is an ideal work schedule for both parties]."[5]	- Combine needs of employer with wishes of employees - Computer as support
Vos (2008)	"[With] **'self-rostering'** a small group of employees designs its own working times in mutual consultation for a period of four to twelve weeks. (…) Preliminarily the manager determines for the whole planning period the amount of personnel he needs for each hour minimally and maximally. He also gives the qualifications required. (…) The second step is that employees indicate when they want to work and want to be free within the specified time frame. (…) With self-rostering (…) the result has to be within the minimum and maximum boundary line. It is up to the employees to compromise, so the demand is met. (…) The result gives the manager an enrolment which meet his preconditions" (p. 15)[6]	- A working schedule is made on the basis of staffing needs and employee preferences - Compromise of employees

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[3] The original quote is in Dutch: "Bij zelf roosteren ontwerpen werknemers het eigen rooster langs hun voorkeuren, eisen en wensen aan de arbeidstijden en het combineren van werk en privé."

[4] The original quote is in Dutch: "Bij zelfroosteren bepaalt eerst het management hoeveel personeel op welke dagen en uren nodig is (bezettingseisen). Daarnaast maken werknemers hun wensen kenbaar door aan te geven welke uren zij willen werken (persoonlijke werkrooster). [De informatie] gaat in de computer en daar rolt iets moois uit, namelijk een ideaal rooster voor werknemer en werkgever."

[5] The original quote is in Dutch: "Bij zelfroosteren bepaalt het management eerst hoeveel personeel op welke dagen en uren nodig is. Vervolgens maken de werknemers hun wensen kenbaar in hun persoonlijke werkrooster. 'Dat gaat allemaal in de computer, en daar rolt dan een ideaal rooster voor beide partijen [uit]', stelt Jongerius."

[6] The original quote is in Dutch: " [Met] 'zelfroosteren' ontwerpt een kleine groep werknemers voor een periode van vier tot twaalf weken in onderling overleg de eigen werktijden. (…) Vooraf bepaalt de manager voor de hele planningsperiode voor elk uur hoeveel personeel hij minimaal nodigheeft en maximaal kan gebruiken. Daarbij geeft hij ook de vereiste kwalificaties aan. (…) De tweede stap is dat werknemers binnen het aangegeven tijdkader aangeven wanneer wij willen werken en wanneer zij vrij willen zijn. (…) Bij zelfroosteren geldt echter de eis dat de einduitkomst binnen de minimum- en maximum grenzen moet vallen. Het is aan de

Zeggenschap (2008)	"**Self-rostering** means that a group of employees make work schedules by themselves. This is based on a company time frame determined by the employer in which the quantitative and qualitative demands have to be met. By designing the work schedules, the employees determine their own starting and ending time c.q. duration of their services and are supposed to create a dialogue to synchronize the individual wishes with the requirements set by the employer." (p.6)[7]	- Company time frame determined by employer - Starting and ending time determined by employee - Synchronize wishes (compromise of employees)

Table 1 Descriptions of self-rostering in both scientific and non scientific articles

The different definitions and descriptions have the following similarities concerning the intention and execution of self-rostering:

- The requirements of the employer are taken into consideration;
- The needs of the employees are taken into consideration;
- Flexible scheduling of hours, days or shifts;
- Scheduling is realized in a group or individually;
- A computer programme can support the scheduling process;
- The working schedule is a result of a compromise between employees.

Although there are different descriptions and terminologies for self-rostering in various articles, the essence of the work systems described overlap. All the definitions and descriptions are based on the idea that the needs of the employee and the requirements of the employer have to converge.

Employers create the framework, based on their requirements, in which employees can choose their own working hours. This way the employer can take the flexible work demand into consideration. Employees, on the other hand, can choose those working hours (or days or shifts) that meet their own needs and create their own flexibility. When the inputs of the employer as well as the employees are known, a provisional schedule can be formulated by an authorized group or individual. A computer program can be used as a supporting tool. When this provisional schedule is created, possible fits and misfits become visible. It may be that not all working hours, working days or shifts are fulfilled. A dialogue can be initiated by the employees

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werknemers zelf om zodanige compromissen te sluiten, dat aan die eis wordt voldaan.(…) De eindoplossing geeft de manager een bezetting die voldoet aan de door hem gestelde randvoorwaarden

[7] The original quote is in Dutch: "Zelfroosteren betekent dat een groep werknemers eigenhandig de roosters maakt. Dit op basis van een door de werkgever vastgesteld bedrijfstijdkader, waarbinnen is aangegeven aan welke kwantitatieve en kwalitatieve eisen moet worden voldaan. Bij het ontwerpen van de roosters bepalen de werknemers zelf de begin- en eindtijden c.q. de duur van hun diensten en worden geacht met elkaar in gesprek te gaan om de individuele wensen te synchroniseren met de door de werkgever vastgelegde eisen.

to come to some kind of compromise, so that all working hours, workings days or shifts are fulfilled. The result is an adjusted, definitive work roster. This process has been visualized in figure 1.
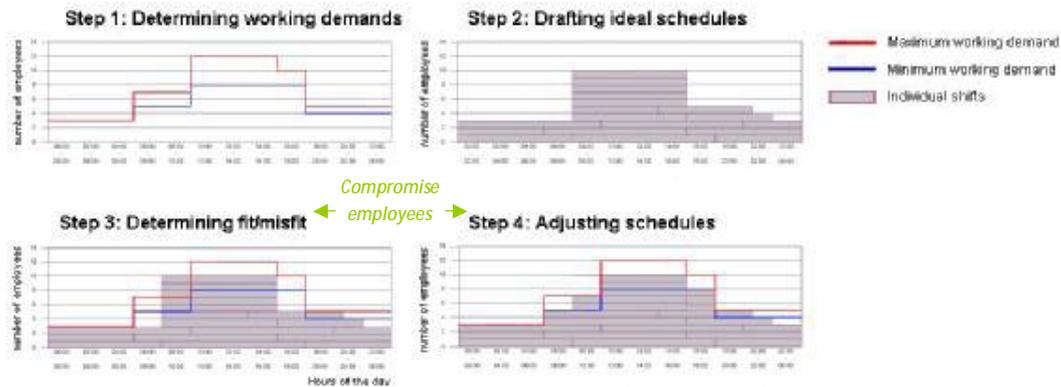
Figure 1. Compromise by employees in making working schedules
Based on Déhora (2008)

Taking the above description into consideration, a concrete definition can be formulated. The following definition is thus used in this research:

"Self-rostering is a system where (1) an employer creates a framework based on the organizational requirements in which (2) employees can indicate their preferences concerning working hours, working days or shifts, that, (3) by means of an authorized scheduling group or individual, (4) and possibly with the support of computer software and/or after a compromising dialogue between employees, (5) results in working schedules where the needs of the employee and the demands of the employer converge."

This definition is visualized in the figure below.

Figure 2. Visualizing self rostering

Earlier, it was indicated that self rostering is a responsibility of human resource management. However, how exactly does it relate to this field of management? This is briefly described in the following part.
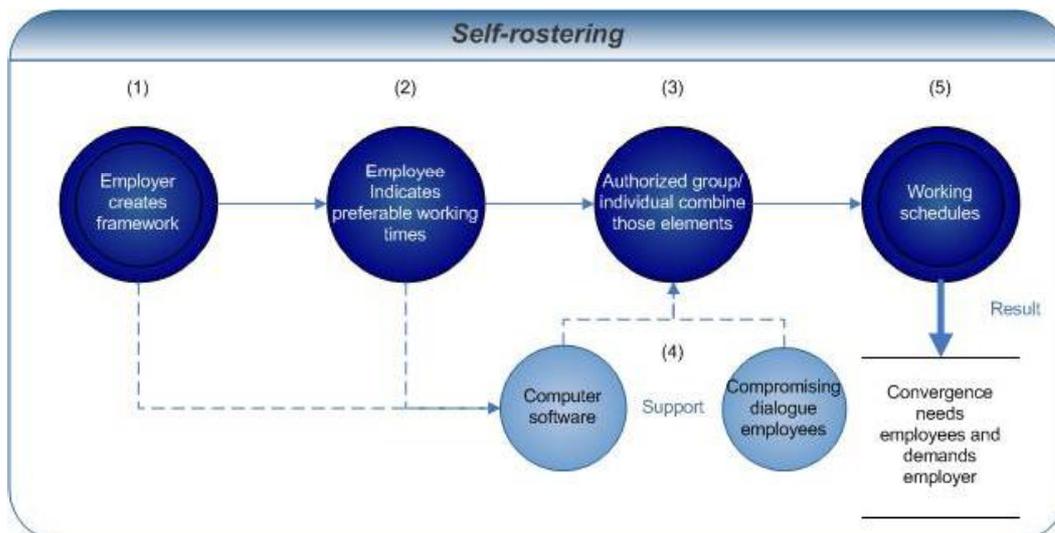
Self rostering as a Human Resource Management (HRM) initiative

"Human resource management involves all management decisions and actions that affect the nature of the relationship between the organization and employees- its human resources"(Beer et al, 1984: 1). Thus, all areas of HRM policy- indicated in figure 3 as HR flow, work system and rewards, seek to promote a good employment relationship that caters for both employer and employee needs. For instance, it is acknowledged that effective HR flow policies and practices must allow a continual process of matching individual career needs and organizational requirements (Beer et al, 1984).

From the perspective of the Harvard model (presented below in figure 3), the decision to use self rostering is an HRM initiative aimed at increasing employee influence which in turn is regarded as a valuable tool for positively affecting the relationship between the employer and the employee. Because self rostering enhances employee influence, it inevitably affects the work system and human resource flow which are indicated as policy areas of HRM in the Harvard model. Therefore, employee influence through self rostering has the ability to determine the face of the HRM system in an organization.
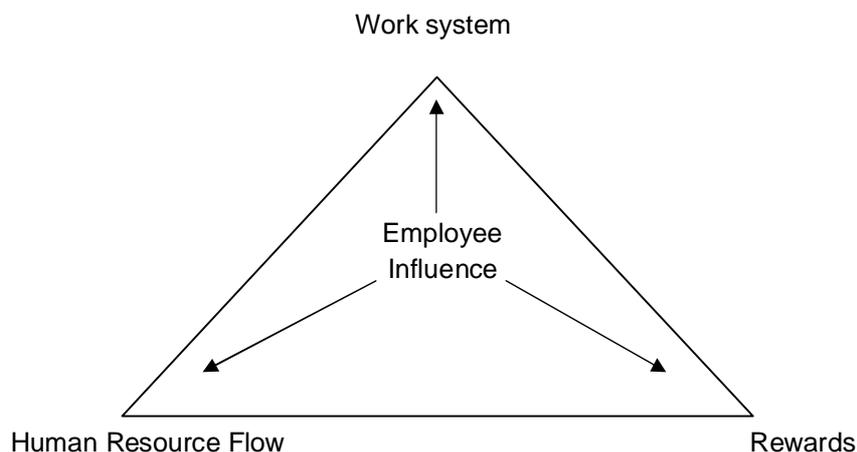
Figure 3. The Harvard model

Looking at the above figure, it is easy to envision self rostering as an influence provider, but how much influence does it give to the employee? Does it exist in a standard form? This is addressed in the next section.
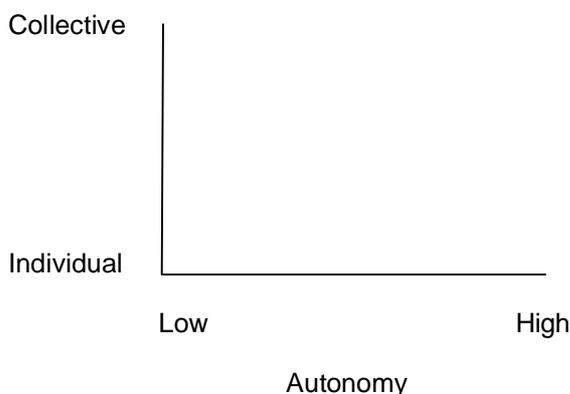
2.2 The typology of self-rostering

Self-rostering is a system which can be applied in different forms. When looking at the definition, two dimensions can be deducted on which the forms can be distinguished. Self-rostering was defined in section 2.1 as: "*a system where an employer creates a framework based on the organizational requirements in which employees can indicate their preferences concerning working hours, working days or shifts, that, by means of an authorized scheduling group or individual, and possibly with the support of computer software and/or after a compromising dialogue between employees, results in working schedules where the needs of the employee and the demands of the employer converge.*"

The first dimension that can be derived from the definition is autonomy. This is because with self-rostering, employees can indicate their preferences concerning working hours, while they initially had little or no involvement in the creation of the rosters. The term autonomy literally refers to regulation by the self. Its opposite, heteronomy, refers to controlled regulation, or regulation that occurs without self-endorsement (Deci and Ryan, 2006:1557). The more autonomy the employees have over the creation of their roster, the more responsibility, control and influence they have over it. The amount of autonomy is based on the demand set. For example, if an organization creates a fixed basis roster, where 60% of the amount of work is already divided and the other 40% can be filled in by the employees themselves, the amount of autonomy would not be as high as when the organization creates a basis roster where 10% is fixed and the other 90% can be determined by the employees.

A second dimension can be described in terms of the individual versus the collective. It is possible that each employee creates his or her own roster individually or that the roster is created by a group of employees. Those are the two most extreme variants; however intermediate forms also exist, for instance when each individual indicates their own preferences but the group as a whole decides on the final roster by means of a compromising dialogue and taking all preferences into consideration.

When these elements are combined in a figure, the following model arises:

Collective

Individual

Low   High

Autonomy

**Figure 4. Self-rostering typology dimensions model**

Forms of self-rostering placed in the model

The only classification of forms that is made so far is that constructed by the NCSI (Nederlands Centrum voor Sociale Innovatie). They identified five forms of self-rostering:

1. Exchange of shifts; gives the employee the possibility to adapt their fixed roster to their own preferences by changing shifts with colleagues.
2. Making an inventory of preferences; the employee can indicate what his or her preferences are. The scheduler will try to honor those preferences, but this is not guaranteed.
3. Shift-picking; employees can choose between shifts that are determined by the organization.
4. Matching; the preferences of the employees will be matched to the needs of the organization by a software program. Bottlenecks that might occur will be solved in consultation with the employee and the employer
5. Full self-rostering; the employee determines when he or she wants to work and the employer will adjust his needs and working times to the availability of the employee.

These forms are differentiated on the amount of autonomy an employee has. An employee has almost no autonomy when he or she exchanges shifts. The shifts are set and the employee can only try to change a shift with a colleague. However, in the full self-rostering variant the amount of autonomy is very high: the employee indicates when he or she wants to work and the employer will adjust his needs to that. This form is also characterized by an individual level. Each individual creates his or her own roster, without consultation with the colleagues. Making an inventory of wishes and matching also take place on an individual level. The exchange of shifts moves away from the individual level, while an employee needs his or her colleagues in order to be able to exchange. The shift picking can occur on an individual level as well as on a collective level. With full self rostering, the demand is completely set by the employee; the other forms of self-rostering are characterized by a demand set of the employer.

In the following, the forms identified by the NCSI are placed in the model:
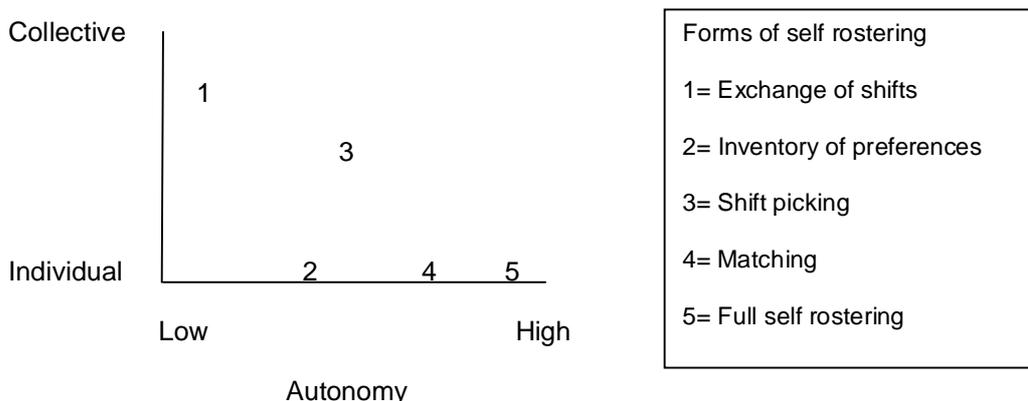
Figure 5. Forms of self-rostering

2.3 Reasons associated with the adoption of the self rostering work system

The goal of self rostering

When companies adopt self rostering, they seek to achieve the positive results associated with the practice. What then are the goals of this work system? This section addresses this question.

The adoption of self rostering has differing premises in different organizations because not all organizations decide to use this work system for the same reasons. However, various literature has documented some of the key goals that self rostering is aimed at. Through the various reasons ascertained to the use of self rostering, one can recognize a trend that shows its root causes for implementation.

To carefully realize these goals, both theoretically and practically based assumptions are highlighted in order to converge towards a more reliable answer to the question as to why companies implement self roster systems.

Theoretically based assumptions

It is documented in Beer, Spector, Lawrence, Mills and Walton, (1984), that "changing values of the work force, particularly relative to authority, are causing corporations to reexamine how much involvement and influence employees should be given and what mechanisms for employee voice and due process need to be provided" (p.5). Therefore, one of the ways in which organizations have sought to realize this employee involvement, influence and voice is through the adoption and implementation of self rostering. It can thus be said that management also decides to use self rostering in order to share influence and work to create greater congruence of interests between management and the employee groups represented through these mechanisms.

Beer additionally states that corporations are reexamining traditional assumptions about career paths and taking into account employee lifestyle needs in transferring employees and scheduling work (Beer et al, 1984) - a goal that is similarly realized through self rostering. And so, what are the advantages of providing employees with influence through flexible work time scheduling such as self rostering?

Various authors have highlighted many advantages that are premised on the provision of flexible work schedules. For instance (Swart, 1974; Fields, 1974; Nollen and Martin, 1978; Orpin, 1981; Schein, Mauner, and Novak 1977; Kim and Campagna, 1981) suggest that organizational attachment, attendance, and job attitudes are favourably associated with flexible work schedules. Similarly, authors Pierce and Newstrom indicate in their research that "symptoms of stress appear to decline subsequent to the implementation of a flexible working hour arrangement" (p.247). Further, it is argued that providing the employee with flexibility in work scheduling expands his opportunity to respond to personal demands. This consequently expands his opportunity to fulfill needs in the non work domain. Flexible working hours can also

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contribute to quality of working life through increased work related autonomy and responsibility (Pierce and Newstrom, 1983).These authors also suggest that a flexible working hour arrangement can provide the context for a more efficient utilization of the human 24-hour clock and can decrease the amount of stress. Therefore, do the advantages increase in accordance with the level of work time flexibility? Pierce and Newstrom (1983) report that "the more time autonomy that employees perceive that they have for scheduling their work and non work time, the more their work related attitudes and behaviors will be influenced" (p.249) It was also noted in their research that the greater the flexibility of the schedule, or the greater the amount of discretionary time, the higher the level of performance was. Time autonomy additionally had a significant correlation with employee attitude variables as it was noted that the direction of the relations suggested that employee satisfaction and organizational commitment increased with increasing degrees of perceived time autonomy, while psychological stress declined.

Studies of contemporary organizations that adopt emerging work systems such as High commitment and High Performance Work Systems have also shown that flexible work time arrangements such as self rostering are an instrument used to achieve some organizational goals. For instance Baur, who case studies High Performance Work Organizations, states that a higher involvement of workers in these organizations is associated with higher job satisfaction (Baur, 2004). The author further states that this positive effect is dominated by the involvement of workers in flexible work systems, indicating that workers particularly value the opportunities associated with these systems, such as an increased autonomy over how and when to perform their tasks. Another line of argument as to why HPWO's directly increase workers' job satisfaction is based on the concept of *procedural utility*, which means that individuals not only value outcomes as usually assumed in economic theory, but also the conditions and processes leading to these outcomes (Frey, Benz, and Stutzer, 2002). According to this concept, individuals prefer independence in decision-making, autonomy and relatedness to being subject to the traditional Tayloristic hierarchical decision making. One can thus say that under conditions where flexible work schedules reinforce specific employee needs, a contribution to satisfaction (Dawis et al, 1968), job involvement (Allport, 1947), organizational commitment (Porter et al.,1974) and work attendance (Dawis et al.,1968; Steers and Rhodes, 1978) are made (in Pierce and Newstrom, 1983).

The above account broadly demonstrates what kind of goals self rostering seeks but does not categorize the goals in terms of concrete theory. Felstead, Jewson, Phizaklea and Walters (2002) attempted to highlight the premises of the use of family friendly practices - such as self rostering - by using concrete theoretical grounds. According to these authors, there are four main approaches why managements adopt family friendly work practices such as self rostering. These approaches are the institutional theory; organizational adaptation theory; high commitment theory and the situational theory. Institutional theory links management decisions to adopt family friendly practices to organizational size, ownership, industry, unionization levels and other factors that influence an organization to conform to normative pressures in society. Organizational adaptation theory on the other hand, links the responsiveness of organizations to internal environmental factors such as proportion of female staff, skill levels, work processes and senior management values. Thirdly, the high commitment theory regards family friendly practices as strategic HRM initiatives to generate increased employee commitment to the

organization. Finally, situational theory explains employer adoption of these practices in terms of pressures to increase profitability and productivity, and problems with labour recruitment and retention (Bardoel, Tharenou and Moss, 2001).

How then does self rostering play a role as according to these theories? As regards the institutional theory, the goal of self rostering is to meet institutional forces' expectations towards an organization. It is the pressure from institutions such as unions, shareholders and more that influences management to use the self rostering system. This differs from the organizational adaptation theory in which self rostering is premised on the goal to achieve internal organization environment needs. Therefore if employees within an organization are mostly comprising of married women, management from this theoretical perspective can adopt self rostering to ensure that these employees' needs to balance work and family life at home are met. Due to the perceived link between flexible work time practices and increased employee commitment, the high commitment theory suggests that self rostering is implemented for the purpose of increasing employee commitment which is a much needed variable in effective organizations. Lastly, self rostering according to the situational theory is implemented for the purpose of improving organizational effectiveness when a competitive labour market situation arises.

Practically based assumptions

Case studies have shown that organizations have introduced self rostering for different reasons. Some examples of these organizations and their goals associated with the use of self rostering are shown in the table below:

Author	Case study organization	Reason/ Goal for using self rostering
LRD Survey, (1998)	Salisbury healthcare NHS Trust	Improve work- life balance
TUC Work life balance project (1998)	Bristol City Council	Solution to unhappiness through work-life balance
Teahan, (1998)	Tralee General Hospital in Ireland	To decrease staff dissatisfaction, absenteeism, vacancies and increased staffing costs
Prescott and Bowen, (1987)	Large empirical study of nurse retention in 90 patient care units in U.S.A.	To rid of staff nurse resignation rooted in staff scheduling problems thus employee retention
Thornthwaite and Sheldon, (2004)	Oelz GMBH	To maintain a close, supportive relationship with employees, and to meet the flexibility conditions agreed upon in the collective agreement.
Thornthwaite and Sheldon, (2004)	Neckermann Versand Oesterreich AG (Neckermann)	To reduce labour costs while increasing efficiency, maintaining numerical flexibility and retaining trained effective employees.

Table 2: Reasons for using self rostering

Having looked at both the theoretical and practical assumptions as to why the self rostering system is used, one can conclude that the goals of self rostering are as follows:

- Increase employee commitment and worker satisfaction.
- Improving work life balance
- Increasing employee influence to cater for this growing employee need in contemporary organization.
- To gain employer and employee congruence in interests.
- To attract and retain valuable employees due to its family friendly nature.

Realizing the above stated goals would thus mean that self rostering has achieved effective outcomes. This is however a blank statement and therefore necessitates more clarification on what effectiveness in self rostering really means. The next sub section attempts to do this.

2.4 The meaning of self rostering effectiveness

Because self rostering is a relatively new concept, literature has not yet reached extents that describe what is meant by the work system's effectiveness. However, one would find it helpful to try and define self rostering effectiveness by first looking at what HRM effectiveness is. This is because self rostering is an HRM work system and thus its outputs consequently reflect on HRM effectiveness. Therefore, in order to realize what self rostering effectiveness is, it could be helpful to fundamentally consider effectiveness from a broad HRM function point of view before narrowing down to a work practice point of view.

It has been noted through various literature that there is no one clear cut definition of HRM effectiveness (e.g in Boselie, Paauwe and Jansen, 2001; and Kane, Crawford and Grant, 1999). The absence of a widely accepted definition of HRM effectiveness could likely be caused by the fact that there are different ways to look at HRM effectiveness. Guest and Peccei (1994) looked at how to measure HRM effectiveness and came up with four possible approaches:

1. To measure HRM effectiveness against specific goals;

2. To use specific quantitative measures such as unit labour costs, labour turnover, and productivity;

3. To suggest that HRM effectiveness is too complex to measure it separate from organizational effectiveness, and therefore use measures of organizational effectiveness as surrogate;

4. To recognize that organizations are political systems (stakeholders form judgments based on their interpretations of events like goal achievement).

The authors conclude that measuring HRM effectiveness is very complex. However, they state that the most sensible and the most important indicator of HRM effectiveness lies in the judgment of key stakeholders. Thus according to Guest and Peccei (1994) "while aware of the

range of possible measures of HRM effectiveness, and aware in particular of the desirability of developing clearly specified goals and objective quantitative indicators, together with financial criteria, we suspect that the interpretation of these by key stakeholders is the most relevant and useful indicator of HRM effectiveness" (p. 224). Therefore, this report uses the concept of effectiveness with regard to the extent to which key stakeholders see the self rostering practice as effective.

Based on the above literature one can define self rostering effectiveness as:

"The extent to which key stakeholders perceive goal attainment, helpfulness and well-performing of self rostering".

The definition of self rostering effectiveness raises the assumption that effectiveness is viewed differently by each party involved in the work system's undertaking. This assumption stimulates curiosity as to how self rostering impacts all these parties with regards to effectiveness and thus raises the following question: how is self rostering perceived as 'effective' by the key stakeholders? In addressing this, one has to initially highlight who these stakeholders are.

Since an employment relationship is formed on the basis of a contract between the employer and the employee (Tsui and Wu, 2005), these two parties are considered as key stakeholders. However, the other parties that are outside the organization could also be recognized as important parties and are included when examining the effectiveness of self rostering. These parties, according to (Perlitz and Seger, 2004) comprise the company stakeholders and shareholders who comprise of employer and employee representatives such as unions and associations. Having identified the stakeholder parties, one can proceed to explore the effectiveness of self rostering based on their perspectives.

Effectiveness from an employee perspective

Looking at the goals of self rostering in section 3.3, it is noted that employees seek work satisfaction, work life balance and the ability to promote their interests. Therefore, when self rostering realizes these needs, the employee judges the work system as effective.

Effectiveness from an employer perspective

Once again referring to section 3.3, one can note that employee commitment, worker satisfaction, employee attraction and retention, and increased efficiency are regarded as key reasons why employers implement the self rostering system and therefore, effectiveness is achieved by realizing these goals.

Effectiveness from an employer/employee representative perspective

When the process of self rostering takes place, ER representatives such as unions reflect their concerns on the issue in more than one way. For instance in Germany, the focus following work

time changes has turned to reducing overtime work because they argue that high levels of overtime contribute to high unemployment (Arrowsmith and Sisson,2001). In the UK on the other hand, unions are generally in favour of 'family friendly' or 'work-life balance' initiatives but fear that flexible working could be used to individualize and casualize employment. For instance, according to a Mori poll commissioned by the Trades Union Congress (TUC) in 1998, two in five employees questioned said they had no choice but to work 'unsocial' hours under flexible schemes, and far fewer had some control over working hours to balance work and other commitments (Arrowsmith and Sisson, 2001). As for the Netherlands, the social partners have made major steps in the introduction of flexitime in collective agreements, partly in response to government measures, many of which only define a framework to be implemented at company level. Effectiveness can therefore be considered as achieved by these stakeholders in the event that self rostering does not interfere with their interests whatsoever these interests may be at the point in time.

Having described the meaning of effectiveness, one can now proceed to discover the factors that are considered to promote and hinder it. This is the gist of the next section.

2.5 Factors affecting the effective use of self rostering

As has been noted earlier, the adoption of the self rostering work system has been associated with the advantages that are assumed to be the outcome of its implementation. However, not all organizations that adopt this system get to enjoy its perceived advantages which raises questions as to why this is the case. Self rostering activities do not exist in a vacuum, but are shaped by the contexts within which they operate. This section addresses the contingencies that underlie the effective use of self rostering and thus uses the contingency approach to explore these factors. The focus of this section is thus based on the question: 'what factors affect the effective use of self rostering?'

In order to tackle this question adequately, factors as accounted in scientific articles shall be highlighted in tables. Following this, the factors will be grouped as according to three contingency based categories- external level, internal level and individual levels to establish a more concrete overview.

Factors stimulating effectiveness of self rostering as according to scientific literature

Below is a table that highlights the factors that affect self rostering effectiveness as according to scientific writings:

Author	Title article	Factor quote	Deducted factor
Hung, R. (1992)	Improving productivity and quality through workforce scheduling	"for hospital settings a work out period of at least five months has been suggested" (p.6)	Period of adaptation is necessary for this work time arrangement to be effectively implemented
Mursula, Vahtera, Kivimaki, Kevin and Pentti, (2002)	Employee control over working times: associations with subjective health and sickness absences.	"As housekeeping responsibilities concern women more than men, the important role of work time control among aspects of control, especially in women, is to be expected". (p.277).	The more women you have as consisting an organization's workforce, the more likely that a family friendly practice like self rostering will be appreciated and thus more effective.
Anxo, D., Boulin, Y.V., Fagan, C., Cebrian, I., Keuzenkamp, S., Klammer, U., Klemmer, C., Moreno, G.,Toharia, L. (2006)	Working time options over the life course	"modifications in consumer behavior and product diversification have meant that an increasing number of enterprises have gradually abandoned tayloristic methods of mass production". (p.20) "In several Member States, such a policy has to be complemented by a proactive policy that makes it possible for both men and women to better balance work and other social commitments over the life course" (p.23)	Consumer behavior also determines the suitability of SR. i.e if product diversification means skill mix and adoption of less tayloristic methods-> SR is more suitable in this case and can be more effective. A supporting mechanism such as the EU Employment strategy makes the adoption of SR more appropriate.
Baur , T.K (2004).	High Performance Workplace Practices and Job Satisfaction: Evidence from Europe	"Increased global competition and the rapid developments in information technology induced managers to rethink the way work usually has been organized, leading to an increasing adoption of so-called "innovative", "high performance", "new", or "flexible" workplace organizations. The main feature of these High Performance Workplace	Holistic organization featuring flat hierarchical structures, self responsible teams, horizontal communication channels.

		Organizations (HPWO) is a change from a *Tayloristic* work organization	
Thornthwaite and Sheldon (2004).	Employee self rostering for work family balance: Leading examples in Austria.	"Asks what sorts of factors encourage management to adopt such schemes and whether different factors encourage their retention over time. In both cases, external environmental factors, internal environmental adaptation and management's embrace of high commitment strategies all influenced managerial decision making"(p.238).	A workforce characterized by high commitment towards its organization is a necessary factor for the effectiveness of self rostering because this system requires consideration for both employer and employee needs. An external environment consisting of e.g unions that promote this kind of flexibility strengthens self rostering adoption and effectiveness. A workforce that is able to willingly accept change helps in the effectiveness of a newly adopted practice like self rostering.
Hoffart, N and Willdermood, S. (1997).	Self scheduling in five med/surg units	"(…) five factors influenced a successful outcome in all cases: (1) committee structure, (2) staff education, (3) negotiation skills, (4) development of guidelines and (5) managerial support." (p. 42)	A committee which supports the scheduling process is advisable. Staff should know the self rostering philosophy and should be informed about it. Negotiation skills are necessary for the employee concerned in the self-rostering system.
Silvestro, R and Silvestro, C. (2000).	An evaluation of nurse rostering practices in the National Health Service	"[The managers of the wards investigated] emphasized the importance of investing in training every staff	Inform the employees concerned to create support.

		member on the ward to understand fully the rostering problem and to appreciate the implications of their shift allocation decision." (p. 531)	
Wortley, V., and Grierson-Hill, L. (2003).	Developing a successful self rostering shift system	"One of the keys to success of the trails was the positive and re-affirming attitude of ward managers. They were enthusiastic about self-rostering and believed in the process. Without strong leadership self-rostering would not be possible." (p. 42)	As a (project) manager it is important to be enthusiastic and convincing about the potential of self rostering.
Drouin, R., and Potter, M. (2005).	Flexible scheduling. Exploring the benefits and the limitations	"Keep in mind that the way a shift change is implemented affects its success." (p. 72F) "One major concern about self-rostering is that the size of a unit affects whether or not this system is feasible." (p. 72E)	Good preparation of a shift or system change is necessary. The size (small size) of the self rostering group is important if it to achieve successful outcomes.
Teahan (1998).	Implementation of a self scheduling system: a solution to more than just schedules	"form a 'staff self-scheduling' committee..The purpose...of this committee was essentially to ...plan, implement and evaluate the new system of scheduling". (p 3-4) "A degree of flexibility was required because of the possibility of a sudden or unpredicted change". (p 5).	A committee that is dedicated to seeing this system work should be in place to ensure adequate management of the system and thus effectiveness. Collegiality is necessary in order to ensure that employees are willing to cover for a colleague who is unavailable at the time

			of his roster period.
		"While it was impossible to please everyone at all times.. make every attempt to accommodate as many individual staff requests as feasibly possible". (p 5).	Promote individual preferences whenever it is possible.
		"requisite attributes for managers include common sense, intelligence, clarity in communication, the ability to simplify complexity, interpersonal skills, altruism, progressiveness" (p 7).	The self rostering project manager needs to have good communication skills, interpersonal skills and be altruistic.
		"When planning a change, it is necessary to be.. patient with individuals who may not have reached the degree of maturity". (p. 11).	Allow for an employee adaptation period.
De Leede, J and Peltzer, F. (2008)	Studiereis NCSI Zelfroosteren Stockholm	"[Self-rostering] works best In departments that: - have a homogenous composition; - have a good manager; - pursue a win-win situation." (p. 5)[8]	The department or organization implementing self rostering should consist of a homogenous group of employees.

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[8] The original quote is in Dutch: "Het werkt het beste op afdelingen die:
- een homogene samenstelling hebben,
- een goede manager hebben,
- een win-win agenda nastreven."

Vos, P. (2008)	Geen diensten plannen, maar uren verdelen. Zelfroosteren: win- win voor werknemers en werkgevers	"The achievement of (…) profit on the side of the employee requires that the group composition of the self-rosterers is as varied as possible (…). A good dispersal across ages, men–women ratio and society connections increase the chance of success in self-rostering." (p.18)[9]	To increase the chances of successfully implementing self rostering, the group must be heterogeneous in terms of age and gender.

Table 3: Factors that affect self rostering effectiveness according to scientific literature

To summarize the above table, the factors that stimulate self rostering effectiveness are pointed out as follows:

- The adaptation period that is given to self rostering employees.

- Gender (e.g women are more likely to appreciate and thus promote the effectiveness of this system).

- Type of employee (e.g employees who accept change; those who have negotiation skills).

- Type of manager (e.g an enthusiastic self rostering manager can promote the system's effectiveness).

- Heterogeneity and homogeneity within the self rostering group (e.g the group of employees should be heterogeneous in terms of gender and age, but homogenous in terms of skills).

- Size of the self rostering group (e.g the smaller the group, the easier it is to realize the advantages of self rostering).

- External environmental pressures (e.g Unions that promote self rostering; European Union policies; consumer demands).

- Organization's power relations (e.g dual commitment culture is necessary).

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[9] The original quote is in Dutch: "Het realiseren van (…) winst aan werknemerskant vereist wel dat de groepssamenstelling van de zelfroosteraars zo gevarieerd mogelijk is (…). Een goede spreiding over leeftijden, man-vrouwverhouding en samenlevingsverbanden verhoogt de kans op succes bij zelfroosteren."

- Organization structure (e.g a flat or horizontal structure promotes suitability of the work system).

- Level of collegiality (e.g the higher the collegiality amongst employees, the more flexible they are willing to be in cases that necessitate them to cover up for a colleague's absence).

- Individual focus (e.g this should be the focus of attention).

- Employee's level of knowledge about the self rostering system.

The perceived factors can now be grouped according to contingency theory which categorizes factors on three levels- environmental variables (external level), organizational variables (internal level) and personal variables (individual level).

EXTERNAL LEVEL
• External environmental pressures (e.g Unions that promote self rostering; European Union policies; consumer demands).
INTERNAL LEVEL
• Size of the self rostering group (e.g the smaller the group, the easier it is to realize the advantages of self rostering). • Heterogeneity and homogeneity within the self rostering group. • Organization's power relations • Organization structure • Adaptation period • Level of collegiality • Individual focus
INDIVIDUAL LEVEL
• Type of manager (e.g an enthusiastic self rostering manager can promote the system's effectiveness). • Type of employee (e.g employees who accepts change; those who have negotiation skills). • Gender (e.g women are more likely to appreciate and thus promote the effectiveness of this system).

- Employee's level of knowledge about the self rostering system.

Table 4: Contingency factors affecting self rostering effectiveness

Further exploration of the factors using practical methods is however necessary to validate the above theoretical findings and to seal any gaps in available literature. Therefore, the next task is to describe the factors found on the basis of interview responses from HRM specialists who are particularly knowledgeable about the self rostering system. However, it is necessary to show the method used in deriving this primary information. This is shown in the following chapter.

3. METHODOLOGY

The research is a pure research as it is based on "gaining knowledge for knowledge's sake" (Babbie, 2007:25). It therefore employs a method that is driven to explain the use of self rostering and make sense out of apparent chaos in this topic. Further, the purpose of the research is to explore the said subject which is relatively new.

In the previous section, secondary data in the form of literature review was used to gather all data relating to the first 3 research sub questions, thus forming the theoretical framework. For the purpose of gaining primary data, a qualitative interview method is used to fulfill this exploratory study's aim. The **qualitative method** is preferable when answers cannot be presented in numbers in a meaningful way, but is applicable for creating theories (Lekvall and Wahlbin, 1993). An advantage of this method, often carried out via interviews, is the possibility to get a holistic view of the studied problem and grasping dynamic and complex interdependencies between variables (see appendix 3 for full advantages of using this method). Therefore, this method seems to be in line with the research's exploratory oriented objectives.

Sample

Seven[10] purposely selected officials are included in the sample that is used to derive primary information concerning their perceptions about the factors that affect self rostering effectiveness. These officials are selected on the basis that they are all Human Resource Management professionals who have specialist knowledge about self rostering. The use of experts has been noted as advantageous in various literature and therefore, this research seeks to benefit from these perceived advantages. For instance Awad and Ghaziri believed that by interviewing an expert, a researcher obtains an opportunity to confirm information and receive the expert's thinking process dynamically (Awad and Ghaziri, 2004). Further, it is also documented that to collect and analyze the affairs and processes experienced by experts is a conduit to knowledge acquisition (Moody, Blanton, & Will 1998/ 99). Awad and Ghaziri (2004) proposed several advantages for interviewing experts, including the flexibility of investigating regions about which little is known, a better opportunity for assess the validity of information attained, and a valuable method for deriving information on complex subjects.

Further criteria for selecting these individuals was that they each belong to a different party to the employment relationship e.g employers side, employees side, union side etc (Table 5 shows the profiles of the experts that participated in the study). This limits the probability of a biased opinion arising in the research and enables one to view 'effectiveness' from an all side stakeholder perspective as its definition implies.

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[10] However, 3 of the 7 experts belong to one organization (NS) and were interviewed in one meeting thereby each of these individuals' opinions represented all that were in this group.

Table 5: Profiles of experts participating in the study

Expert's name	Institution	Gender	Function
Esther Segers	Dehora Consultancy Group	Female	Sales Manager
Sam Groen	FNV Bondgenoten	Male	Advisor on working times
Johan Walter	KLM	Male	Working times Manager
Peter Vos	AWVN	Male	Senior consultant- Working times
Albert Van de Riet	NS	Male	HRM Systems advisor
Koos Oegema	NS	Male	Senior Advisor HRM
Alexander Van Nijen	NS	Male	Project Manager

Qualitative interview

Prior to the interviews, the factors gathered in the theoretical framework were presented to the selected sample participants. Following this, an interview comprising of semi structured interview questions was carried out using a standard face to face procedure (see appendix 1 for the interview questions). The expert interview is a special form of semi-structured in-depth interview, as it is linked to the expectation that the interviewed subjects' viewpoints are to be expressed in a relatively openly designed interview situation (Flick, 2003). Dorussen, Lenz, and Blavoukos (2005) believed that expert interviews can provide a distinctive supply for 'inside' information about a subject of interest. The qualitative expert interview in this respect followed a carefully designed interview protocol that was developed in order to gain different perspectives about standard factors that were found in theory, as well as gain additional perspectives of extra factors as acknowledged by expert opinion. This protocol additionally aimed at gaining experts opinions on why self rostering was more prevalent in the health care sector. The responses of the interviewees are aggregated and interpreted accordingly in the next sections.

However, before carrying out the interviews, it was deemed necessary to operationalize the factor criteria that were derived from the theory so as to ensure clarity as regards these factors and avoid misconception due to a likelihood of vague understanding of the factor concepts. Furthermore, operationalizing would also promote the ability to compare expert opinions with theoretical findings on a measurable basis. This is elaborated in the part that follows.

OPERATIONALIZING THE FACTOR CRITERIA

Operationalization of the factors that are said to affect self rostering is something that can be helpful in explicitly making these factors measurable in form of variables. This can allow one to clearly note the needed extent to which a current factor, if existing, needs to vary in order to

achieve effectiveness. Therefore, this section elaborates on the derived factors in terms of operationalization perspectives.

External level criteria

External environmental pressures

This factor concerns the environment that is external to the organization, and the pressures that this environment places on the organization with regards to promoting certain work practices. Therefore, in the context of this research, this factor can be described as any pressure that lies outside the organization and has an influence on an organization's decisions as regards self rostering operations. Key external environmental pressures as described in theory include, unions, consumer demand, labour laws and European Union policies. Measuring this factor thus looks at how and whether these external pressures are biased towards promoting or restricting the implementation of self rostering.

Internal/ Organization level criteria

Individual focus

This factor concerns the extent of individualism in an organization. Individualism is "the extent to which personnel policies are focused on the rights and capabilities of individual workers" (Purcell, 1987:533). Measuring this would therefore note the extent to which employees are allowed to make a choice as regards their preferences for work time. The less restrictions one has in making these choices, the more individualism he has and hence the more effective self rostering will be.

Employee Autonomy in work time

Autonomy means giving more scope to people to regulate and control their own work (Deci and Ryan, 2006). Therefore, employee autonomy in work time could be described as 'giving employees more scope to regulate and control their own work times. Measuring this criterion considers the degree to which the worker has freedom, discretion, and self determination in planning work time schedules (Daft, 2003).

Organization power relations

This is a term used to describe the power distance between employers and employees in an organization. Power distance is defined as the extent to which the less powerful members of institutions and organizations expect and accept that power is distributed unequally (Perlitz and Seger, 2004: 5). Measuring this criterion would thus call for observing the gap between employers and employees in decision making responsibilities. The smaller the gap between the employers and employees, the more likely that self rostering would be feasible and consequently effective.

Size of the self rostering group

Size in this context refers to the number of people in a work group that is undergoing self rostering. To measure this one would need to know what is meant by a large group and what is meant by a small group. According to Silvestro and Silvestro, a large group is that which consists of more than seventy employees whilst a small group is that which has less than thirty five employees (Silvestro and Silvestro, 2000). Several authors suggest that the group for whom self-rostering is intended should not be too big (Drouin and Potter, 2005; Osse and Dragstra, 2001). Silvestro and Silvestro (2000) proposed a small group of fewer than 35 employees. This increases staff motivation and commitment. Other than this, a smaller group has less complex rosters so it can be fully and quickly evaluated by the manager who is responsible for signing of the roster.

Adaptation period

This refers to the amount of time that employees are given to adapt to the changes brought about with the implementation of self rostering. According to Hung (1992), many employees are accustomed to receiving instructions and when suddenly given the freedom to choose, they may not know how to handle such freedom (p.6). Measuring it hence looks at the amount of months that employees are allowed to adapt to a work time arrangement change. Sufficient time according to findings is between 5- 9 months (Hung, 1992).

Collegiality between employees

Collegiality is defined as considerate and respectful conduct amongst employees or an environment characterized by this. Self-rostering is all about compromising. Not every wish can be realized in the final working schedule. Employees have to create a dialogue with each other to come up with a solution for the unfulfilled working hours, days or shifts. According to Lubbers "Colleagues should be willing to work an extra hour or an hour less to get the planning closed" (Lubbers 2008:16). Thus, a feeling of solidarity and collegiality is important to realize working schedules on the basis of a self-rostering system. Measuring this criterion would therefore consider the willingness to negotiate work times amongst employees.

Organization structure

This is a hierarchical concept of subordination of entities that collaborate and contribute to serving the organization's aim. The structure of an organization varies from vertical to horizontal. A vertical organization is characterized by a well defined hierarchical structure, and relies heavily on the formal chain of command for control. This type of structure has more than three levels of management thus considered as vertical (Allen, 1998). On the other hand, the horizontal structure has only one or two levels of management and is more flexible, more adaptable to a participative form of management and less concerned with a clearly defined structure (Allen, 1998). Measuring this criterion would therefore entail the number of management levels there are in an organization and hence distinguishing whether the organization is vertical or horizontal. Self rostering is assumed to achieve effectiveness in organizations that have a horizontal structure.

Heterogeneity and homogeneity within the self rostering group

The term heterogeneous refers to the state of consisting of dissimilar or diverse ingredients whereas homogeneity refers to having a similar kind of nature or having uniform composition. According to De Leede and Peltzer (2008), and Vos (2008), employees in a self rostering group should be homogenous in terms of skills but heterogeneous in terms of gender and age. Regarding heterogeneity, it is deduced that because of the many wishes that self rostering tries to fulfill, it is possible that similar people will have similar wishes as regards working times. Therefore, this could lead to a situation where you have more gaps in some working hours due to the similar non desire to work in those time slots. This is why it is recommended by Vos (2008) that a self rostering work group should consist of people who have differing characteristics so as to get a different mixture of wishes leading to a higher chance of fulfillment of these wishes. However, the characteristics of people that should be heterogeneous should mostly be those relating to an individual's lifecycle. People should consist of different ages and gender to ensure that they have different interests as regards work time. On the other hand, some attributes of people need to remain homogenous in order for the system to work effectively. For instance, skill level amongst employees should be similar because this will facilitate interchangeability amongst employees thereby ensuring that a job responsibility is filled despite the unavailability of an employee. Measuring these criteria would thus consider the composition of the self rostering work group in terms of age, gender and skills and judge as to whether the group is heterogeneous and homogenous in the manner that is recommended.

Individual level criteria

Gender

This is the term used to distinguish between male and females. One uses this criterion to note how many females and how many males consist a self rostering work group. The more women consisting this group, the more likely self rostering will achieve effective results (Mursula, Vahtera, Kivimaki, Kevin and Pentti, 2002).

Education level

This refers to the level of academic achievement of the individual. Measuring this considers higher and lower education levels in terms of the standard stages of education.

Employee knowledge about the self rostering philosophy

To ensure self-rostering success, it is important to inform and/or educate all staff involved. "A briefing of the system reveals the program's value and decreases the possibility that staff will see self-scheduling as a management gimmick to increase productivity" (Hoffart and Willdermood, 1997: 45). Hoffart and Willdermood (1997) advise to provide early educational staff meetings to inform the staff about the work system. Sources of information such as articles about self-rostering should be available to those who are interested. Organizations should also provide staff development programs on self-scheduling. For new staff members, self-scheduling should be a part of their orientation. The measurement of this would thus focus on the availability of awareness instruments such as the ones mentioned above.

Type of employee

This criterion refers to personal attributes that employees should have if they are to ideally suit the self rostering system's principles and thus promote effectiveness of this system. Some of the key attributes that have been mentioned in literature as advantageous to the systems full realization include negotiation skills and acceptance of change.

Type of self rostering manager

This criterion refers to the personal attributes of a self rostering manager. Self-rostering can be feasible when the manager of the self-rostering group has got strong leadership characteristics (Wortley and Grierson-Hill, 2003). Important qualities of a manager that indicate such characteristics are the will to share power and risk, trust the staff to manage the process and the desire to empower them (Teahan, 1998). Adjacent to this, negotiation skills are important skills for a manager (Hoffart and Willwoord, 1997), because discussing about working schedules is the key towards completion of working schedules by means of a self-rostering system. Although the employees are the ones that have to create the dialogue to come to a compromise for a working schedule, the manager should have a supporting role in the first stage of the implementation of self-rostering. His[11] example sets the trend of the way the employees will negotiate when they have to determine the working schedules on their own.

The above section has described the methodology in full, what then were the results of the interviews? This is described in the next section.

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[11] Where 'he', his' or 'him' is used, also 'she' and 'her' apply.

4. RESULTS

All the experts that were approached to participate in this research agreed to help with the study by accepting the interview requests sent to them. Key findings that arose from these interviews included: opinions about whether or not the experts agreed with the literature based factors; what extra factors they perceived as stimulants to self rostering effectiveness; and their opinions regarding the faster progression of self rostering in the health care sector considering their prior factor arguments. Three tables have been structured in a way that presents these findings in an aggregate but comprehensive way. The tables represent interview responses to the following questions which can be found in the interview protocol (see also appendix 1):

- Table 6 indicates results from the question "do you agree with the literature based factors? Why or why not?"
- Table 7 indicates results from the question "from your experience, what (other) factors influence whether or not self rostering achieves effectiveness?"
- Table 8 indicates results from the question "why is self rostering more prevalent in the health sector than others, do you perceive any unique enforcing factors of self rostering in this sector?" and "do you think that self rostering can work in other sectors such as the manufacturing sector? If so, why if not, why?"

On a broader level, these results converge towards answering research sub questions 4 and 5 which were stated in the introduction (see section 1.2.1).

Having described the structure in which this section shall present its findings, one can proceed to show these results.

Expert opinion about literature based findings

Table 6 summarizes the literature based factors that were agreed upon by the interview respondents.

Theoretical Factor	Interviewees who agreed with the factor	Importance of factor as according to interviewee
Adaptation period	- Esther Segers - Sam Groen - Johan Walters - Peter Vos - Koos Oegema - Albert Van de Riet - Alexander Van Nijen	Important Important Very important Important Very important
Gender	None	Not applicable
Type of employee	- Esther Segers - Sam Groen - Johan Walters - Peter Vos - Koos Oegema	Important Very important Very important Not so important Very important

	• Albert Van de Riet • Alexander Van Nijen	
Type of self rostering manager	• Esther Segers • Sam Groen • Johan Walters • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Important Very important Very important Important Very important
Size of SR group	• Esther Segers • Sam Groen • Johan Walters • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Important Not so important Very important (Not certain) Very important
External environmental pressures	• Esther Segers • Sam Groen • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Important Important Not important Very important
Organizational power relations	• Esther Segers • Sam Groen • Johan Walters • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Not so important Very important Very important Very important important
Organizational structure	• Sam Groen • Johan Walters • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Not so important Not important Not so important important
Level of collegiality	• Esther Segers • Sam Groen • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Not so important Important Very important important
Individual focus	• Esther Segers • Sam Groen • Johan Walters • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Important Very important Not important Important
Employee's level of	• Esther Segers	Very important

knowledge about the self rostering system	• Sam Groen • Johan Walters • Peter Vos • Koos Oegema • Albert Van de Riet • Alexander Van Nijen	Important Important Important Very important
Heterogeneity and homogeneity within the self rostering work group	• Esther Segers • Johan Walters • Peter Vos	Not important Very important Important

Table 6: Factors as agreed upon by experts

The table above indicates that all literature based factors, with the exception of gender, were acknowledged as stimulants to self rostering effectiveness. However, one can also note that differences exist in the amount of importance accredited to these factors. It appears that organization structure is very weakly regarded as a contributing factor and could possibly be ignored. This research thus considers this factor as insignificant due to these results.

Extra factors according to expert opinion

Further results that were obtained through the interviews were the extra factors that were accumulated based on the interview discussions. The table below summarizes these factors. However, it should be noted that the number of extra factors derived from the discussions were more than those indicated in this table, but the table only shows factors that were suggested by 2 or more experts (See full list of extra factors in appendix 4).

Deducted extra factor	Expert quoted as proposing the factor
Adequacy in communication about how the system works	- "Rules should be clear to all parties involved in the self rostering process" (Esther segers). - "Good communication of the system's goals is necessary" (Johan Walters). - "Ensure that you use the right people for the purpose of communicating the system's goals" (Peter Vos).
Initial employee acceptance of the work system	- "Employees should actually want and prefer this system before it is implemented" (Esther Segers). - "Employees have to actually 'want' to use this type of rostering" (Koos Oegema). - "Employees should want self rostering as this will generate initial support for the system" (Peter Vos).
The use of a pre-pilot and post-pilot measurement scheme	- "Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing

	the system" (Esther Segers).
	- "Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system" (Sam Groen).
Gradual introduction of the system	- "A gradual introduction of the system can better predict its outcomes" (Sam Groen).
	- "The introduction of the system should be gradual and should not be complimented by various other changes. Too much change at one time is not advisable as employees tend to resist in such circumstances" (Johan Walters).
	- "Gradual introduction of the system. This helps in building employee trust on both the system and management's intentions behind its implementation" (Koos Oegema).
Availability of supportive self rostering technical solutions/ software	- "Technical support systems (ICT) have to be good enough to support the system and lessen complexity issues as regards work time scheduling" (Sam Groen).
	- "Availability of adequate supportive SR technical solutions/ software is required. Due to the SR system's complexity, technical solutions would promote easier facilitation of its execution and ensure transparency in the systems outputs" (Albert Van de Riet).

Table 7: Extra factors based on expert opinion

Explaining self rostering's disparities in prevalence in the health and manufacturing sectors

Given the above sets of idealized factors, could this explain the higher prevalence of self rostering in the health sector? Results to the questions "Why is self rostering more prevalent in the health sector than others, do you perceive any unique enforcing factors of self rostering in this sector? And "Do you think that self rostering can work in a mechanized sector such as the manufacturing sector? If so, why? If not, why?" are shown below.

Esther Segers (Dehora Sales Manager)
• "It is very difficult to attract personnel in the health sector and that is why this system is more prevalent there. The manufacturing sector is just moving from the shift system and is still adapting".
• "Yes, the manufacturing sector can realize an effective self rostering outcome. However, it may require a longer period for its employees to adapt to this new system".

Sam Groen
• "Culture is one reason why the self rostering system is more prevalent in the health care sector. In the health care sector there is a culture of working at a more individualistic level because rosters are in fact already individually based. This differs from other sectors in which you note more collective thinking cultures. Therefore it is expected that the progression of this system is merely faster in health but equally applicable in all sectors."
• "Certainly this work system can work in the manufacturing sector. The factors discussed as suitable for self rostering can possibly be found in such companies too and so, this work system can work on that basis".

Johan Walters
• "Not certain why this is the case. This sector does not seem to have any unique enforcing factors as regards implementation of the SR work system".
• "I believe this work system can achieve effective results in the manufacturing sector despite the existing collective cultures that exist in these companies".

Peter Vos
• "In health offices, most people have their own working time and thus have an already existing flexible choice…. On the other hand, most manufacturing companies like to work in collective systems. Despite this, self rostering can still work in this sector given that it is implemented in its collective form".

Koos Oegema, Albert Van de Riet, Alexander Van Nijen
• "This is because there are a lot of part time employees in hospitals as opposed to other sectors. Therefore, the flexible structure is more or less already in place in these institutions. Further, hospital settings allow for the possibility of varying the numbers of people needed at the workplace".
• "Yes, self rostering is applicable in the manufacturing sector though the collective cultures that are prevalent in these companies could slow down the possibilities of adopting the practice".

Table 8: Explaining SR disparities and applicability in the health and manufacturing sectors

From the above qualitative answers, it can be deduced that the health sector is experiencing a higher prevalence of this work system's implementation due to some already existing structures and cultures that self rostering also aims to bring about. Some of these structures and cultures include the already existing flexible structures and the individualistic cultures found in these institutions. Further, attraction and retention of employees is difficult in this sector and so the introduction of self rostering is an initiative to help solve this problem. However, the results also show that all respondents perceived self rostering as suitable in companies that belong to the

manufacturing sector, but acknowledge that there seems to be a collective thinking culture in these types of companies thus explaining the slower progression rate (the relation between these findings and the found factors is elaborated in the next section). Therefore, self rostering is not more suitable for the health care sector, but merely faster in progression.

The results emerging from this section have brought to light some commonalities and disparities between literature and expert based findings. Further, the results have stimulated some insights which can best be elaborated by forming a discussion. The next section interprets the results and concludes the research.

5. DISCUSSION

Because the research has used two sources of data to gain insight on the factors that influence the effectiveness of self rostering, findings have both been contradictory and complimentary to one another. Both sets of findings can be visualized in a way that clearly shows each set of factors as well as their intersection. This is shown in figure 6 below:
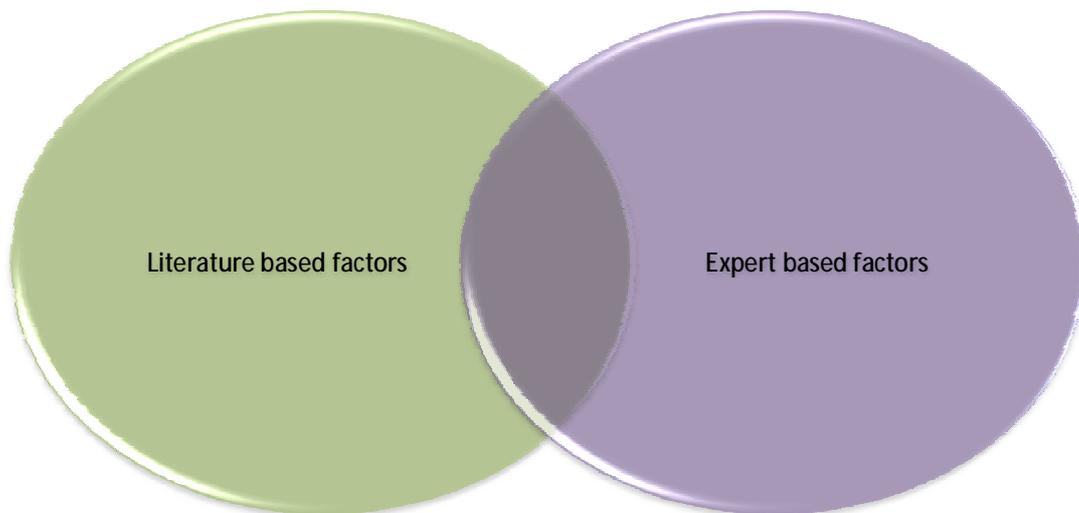

Figure 6: The intersection set of SR effectiveness factors

The results portrayed in figure 6 present a dilemma as to how one can approve or disapprove certain factors. This dilemma is caused by the fact that both literature based factors and expert based factors can not be disapproved merely due to a lack of consensus with the opposite party. However, this research acknowledges the whole set of factors as possible stimulants to the effectiveness of self rostering but draws the following distinctions:

- Only literature based factors and only expert based factors need to be explored further in this section in order to determine the reasons for non consensus.
- Literature and expert consensus based factors are considered as confirmed factors and can thus be conclusively supported from the perspective of this research.

The three distinctive lists of factors are highlighted below.

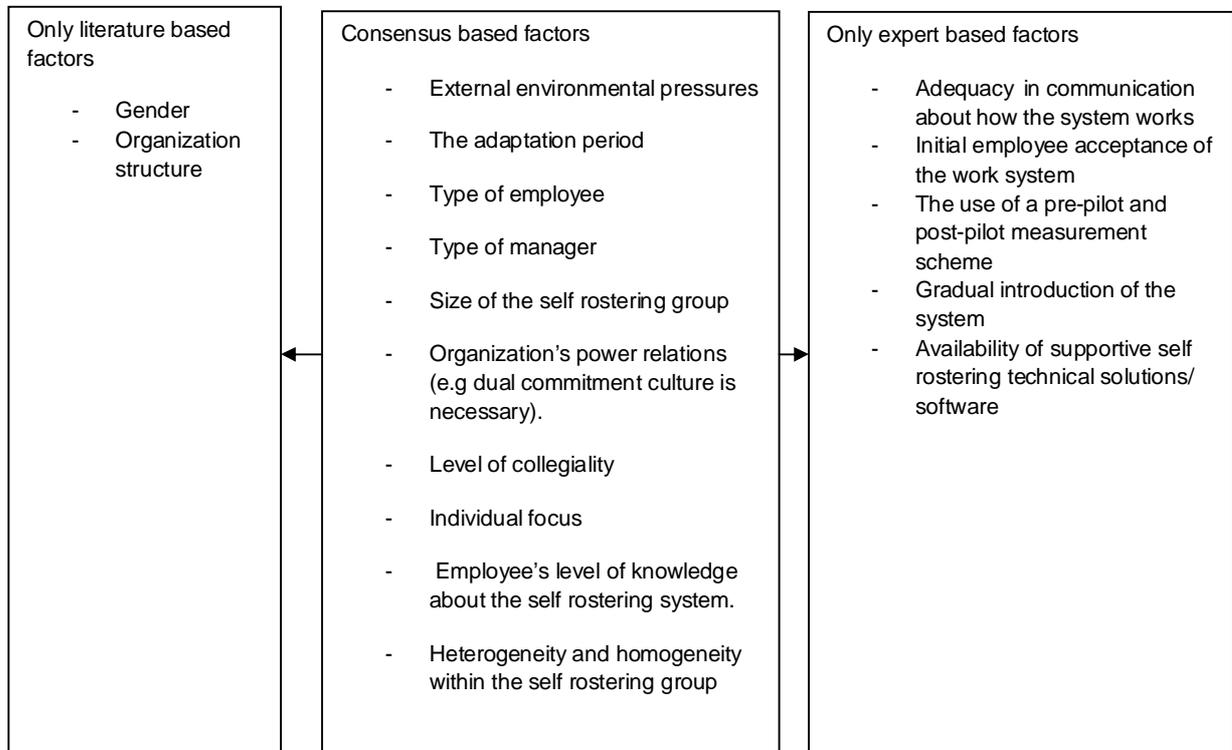| Only literature based factors	Consensus based factors	Only expert based factors
- Gender - Organization structure	- External environmental pressures - The adaptation period - Type of employee - Type of manager - Size of the self rostering group - Organization's power relations (e.g dual commitment culture is necessary). - Level of collegiality - Individual focus - Employee's level of knowledge about the self rostering system. - Heterogeneity and homogeneity within the self rostering group	- Adequacy in communication about how the system works - Initial employee acceptance of the work system - The use of a pre-pilot and post-pilot measurement scheme - Gradual introduction of the system - Availability of supportive self rostering technical solutions/ software

Figure 7: Three distinctive sets of factors

In view of the above, the discussion arising from the results is divided into parts which all contribute to reaching a concrete conclusion about what factors affect the effectiveness of self rostering in the Western European health and manufacturing sectors. These parts are: - explaining the differences between literature and expert interview findings; explaining the extra factors; explaining the higher prevalence of self rostering in the health sector; and explaining the consensus based factors in relation to theoretical findings.

Explaining the differences between literature and expert interview findings

It was found that the factors gender and organization structure were disconfirmed by the experts. It is thus interesting to note the reasons why these factors are not considered as having an impact on self rostering's effectiveness.

Gender

This factor was strongly opposed by the experts. According to the practical findings, organizations that have a dominant male workforce also face pressures that are based on employee needs for more autonomy in working time. In the interview with KLM Working times manager, Mr. Johan Walters, it was found that pilots (who are dominantly male), are the employees who have shown the highest interest in having the self rostering work system implemented in their department. Further, the interview carried out with the NS expert officials,

revealed that the company initially perceived the female gender as being more appreciative about self rostering but following an analysis on the same, results showed that this view was insignificant.

Another explanation that disproved this factor came from Peter Vos who stated in the interview that the gender factor could play a role in smaller towns in which individualism is mostly appreciated by women, but not in larger cities due to the multicultural nature of these places.

The differences between literature and expert findings could possibly be explained by the fact that most literature on self rostering comes from the health care sector. This sector mostly comprises of female nurses and thus it can easily be presumed that females are most suitable for this work system. However, from the results of the expert interviews, it can be noted that this presumption is likely to be disconfirmed as implementation of self rostering and literature about the work system in other sectors grows.

Organization structure

This factor was not exactly opposed by all respondents. However, respondents who agreed with this factor all mentioned that it did not play a significant role in stimulating self rostering effectiveness. For instance, Esther Segers disagreed with this factor and suggested that self rostering was more influenced by the nature of the group of people involved in it rather than the structure. This line of thought was similar to the NS officials' reason for their weak agreement towards this factor. These officials mentioned that the self rostering work system can also work in a vertical structure for as long as the top manager was supportive about the initiative.

It can therefore be seen that this factor is disapproved due to the general opinion that the people found in the organization are most influential in the success of a work system and not the structure of the organization on its own. This shows the value of the nature of people found in the organization as it is assumed that irrespective of the structure, the groups and management that are found in the organization have the power to influence the effectiveness of a self rostering system following its implementation.

A possible explanation for the difference in literature and practical findings is that in literature, self rostering is viewed from a more technical perspective. Therefore, the system is viewed in a way that considers technical structures that can facilitate this work system. On the other hand, the experts seem to view self rostering from a social perspective as they consider personnel relationships as major factors. In addition to this, the experts seem to view it from a more contingent perspective because the arguments raised seem to show that they take other factors into perspective before coming to a conclusion about the importance of organizational structure.

Explaining the extra factors

Adequacy in communication about how the system works

The self rostering system is rather complex in nature due to its difficult task of trying to balance employer and employee needs. This complexity can likely lead to a number of misperceptions about the final resulting rosters. Some employees could feel unfairly considered due to the fact

that it is very possible that the system results in compromising their intended wishes. Therefore, it is considered necessary to communicate how the system of self rostering works in a detailed and clear way so as to ensure that employees become aware of the whole process of self rostering and thus acknowledging the possibilities of not meeting some of their wishes. This communication can be done using various forms including: having staff meetings that are aimed at explaining how the system works; giving out leaflets containing information and guidelines about the work system's goals and processes; and having question answer forums to clear all ambiguities about the work system.

And so, who should be responsible for this adequate communication? This goes back to literature findings which propose that a committee which supports the scheduling process is advisable (Hoffart and Willdermood, 1997). Therefore, even in situations which call for communicating the system's goals and procedures, a committee that is well informed about the system would help in inculcating knowledge about self rostering in all employers and employees involved.

Initial employee acceptance of the work system

Prior to introducing the self rostering work system, it is important to find out whether or not the employees who will be involved in the process are willing to undergo this change in working time. This is because implementing a system that employees do not favour would result in resistance from this group and consequently a possibility of the system's failure. This factor also shows that despite the attractive nature of the self rostering work system, there are still some employees who would not be willing to change their routine work times that they are accustomed to. This is complimentary to Hung's line of thought as he states that "many employees are accustomed to receiving instructions" (Hung, 1992:6). Therefore, these employees may view autonomy in working time as an extra responsibility which they are not willing to have.

On the other hand, if employees are optimistic about using this system before it is introduced, it is more likely that adaptation to its changes would come about faster thereby increasing the chances of self rostering effectiveness.

The use of a pre-pilot and post-pilot measurement scheme

In order to predict the effectiveness of self rostering, it would be helpful if a pilot was undertaken before fully adopting the system. The pilot can thus act as a measurement mechanism as management can measure certain effectiveness aspects before and after the pilot. If these aspects increase after the self rostering pilot, it can be assumed that a full adoption of the system would produce positive results.

Gradual introduction of the system

This factor was suggested by different experts for differing reasons. According to Mr. Koos Oegema, a gradual introduction of the system would promote the building of trust amongst employees towards the employers and the system itself. This is because it is usually the case

that employees tend to be skeptical about new management practices because they view them as cost saving measures. However, if the system is introduced at a slow pace, employees would get to acknowledge the real goals that stand behind it and thus promote its effectiveness.

Another reason why this factor was raised as a stimulant to self rostering effectiveness was that by introducing the system at a slower pace, it is possible to notice whether or not it is likely to be successful. This means that management can predict the outcomes of self rostering by noting some of the change indicators that the system is supposed to affect. For instance, if the goal of self rostering is to achieve a better work life balance and this is not realized, then the system indicates a low performance.

Thirdly, this factor was identified as a stimulant for self rostering effectiveness because it is assumed that employees need time to adapt to organizational changes. Therefore, it is necessary that the introduction of self rostering be done without other organizational changes. This is so because if employees face too many changes at the same time, they would face a higher challenge of adapting to changes and consequently promote a likelihood of low effectiveness of all changes including that of self rostering.

Availability of supportive self rostering technical solutions/ software

In the definition of self rostering, the aspect of supporting computer software was included. As stated in the definition (see page 14-15), the use of self rostering software would be an option in making the complex process of compromising wishes manageable. However, most literature findings do not emphasize on this aspect and as such it would be assumed that literature overlooks the importance of the scheduling software in making self rostering effective. The outcome of the interviews presented a broader view of this factor and highlighted its importance more elaborately. For instance, Mr. Albert Van de Riet emphasized how complex the process of self rostering was and that software solutions needed to be in place in institutions that wanted to implement this work time system. Further, it was highlighted that the use of software gives an indication of transparency in the outcomes that arise from the whole compromising process. This way, employees can trust this kind of system more and thus accept its outputs.

Explaining the higher prevalence of self rostering in the health sector

In the introduction, it was mentioned that self rostering seems to show a higher prevalence in the health sector. This could raise assumptions that this sector is more suitable for this type of work system. Another assumption that could arise is that more of the 'confirmed' factors could be present in organizations that belong to this sector. To have some clarity on this assumption, reference is made to the results that followed expert interviews regarding this inquisition.

In looking at the expert responses, it was noted that all experts disagreed with the possibility that the health care sector had more of the confirmed factors (the confirmed factors are presented in figure 7 as consensus based factors). This prompted an elaboration of why the prevalence was higher in the health sector despite the disagreement that more effectiveness stimulants were prevalent in this sector. From the answers that arose, it was noticed that it was

more a problem of the dimensions of self rostering as was mentioned in section 2.2. Respondents mentioned that there is a culture of collectivism in sectors such as the manufacturing sector and as such, the progression of self rostering in this sector is likely to be slower. This differs from the health sector which has a more individualistic culture which according to self rostering typology is closer to the idealistic nature of the system. Due to this already existing individualism dimension in health care companies, self rostering does not bring about many adjustments in the work place thus proving to be faster in acceptance and implementation.

In addition to the above reasoning, experts also noted that there is a higher prevalence of part time jobs in the health sector and thus already some form of flexibility in these companies. This reasoning was similarly attributed as a factor that would lead to a faster progression of the system and not a determinant for whether or not the system can be effective.

Furthermore, results showed that this sector has attraction and retention difficulties and therefore needs innovative measures such as the introduction of self rostering to improve this situation. This line of thought compliments earlier literature findings on one of the goals of self rostering which is 'to attract and retain valuable employees due to its family friendly nature' (Prescott and Bowen, 1987). On a broader level, this explanation can be visualized in the link between self rostering and human resource management (see figure 3). Therefore, in order to control the human resource flow, these companies adopt this practice more. However, this does not imply that self rostering is more suitable in this sector.

It also appears that disparities in self rostering effectiveness are also prevalent amongst companies within the health sector (see e.g Hung, 1992 and Bailyn et al, 2007) and therefore it should be acknowledged that this is an indicator that effectiveness factors are missing in these companies just as they are absent in the manufacturing sector.

In noting these arguments, one would say that there seems to be a difference between faster progression and effectiveness and a line should be drawn clearly to avoid misperceptions about why self rostering prevails more in one sector and not the other.

From the perspective of this research's findings, it can be said that the confirmed factors that were outlined are the likely causes for deficiencies in the self rostering system's effectiveness in both the health and manufacturing sectors. Therefore, both sectors can realize a higher possibility of self rostering effectiveness if these factors are present. However, it is expected that a faster progression in the health companies will prevail due to an already existing culture and a perceived higher need to use this system for the purpose of managing poor human resource flow.

Explaining self rostering differences between the health and manufacturing sectors in relation to theoretical findings

Section 2.3 presented four theories proposed by Felstead, Jewson, Phizaklea and Walters (2002). These theories are the institutional theory; organizational adaptation theory; high

commitment theory and the situational theory. It would be interesting to note how these theories could be used to help explain the noted differences in self rostering in the health and manufacturing sectors.

The four theories are adoption theories and as such, they only go as far as explaining the reasons attached to the adoption of self rostering. This is illustrated below.
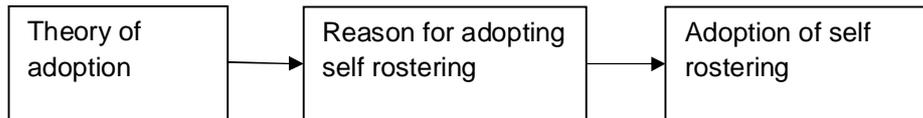
```
┌──────────────┐     ┌──────────────────┐     ┌──────────────────┐
│ Theory of    │ ──▶ │ Reason for adopting │ ──▶ │ Adoption of self │
│ adoption     │     │ self rostering   │     │ rostering        │
└──────────────┘     └──────────────────┘     └──────────────────┘
```

Figure 8: The scope of the adoption theories

Using figure 8, one can explain the higher prevalence of self rostering in the health sector using all four theories.

Institutional theory

This theory attributes the adoption of a work system such as self rostering to pressure from institutional forces. Reasons that were attributed to the higher magnitude of self rostering in the health sector by experts included the need to solve the attraction and retention problem that the sector faces. Therefore, it is probable that institutions in the health sector that are facing this problem have influenced each other to adopt self rostering in order to rid of this crisis. For example, if employees in one health institution are given more autonomy in work time in order to ensure their retention, another health institution will be pressured to do the same for its employees to avoid the risk of losing its employees to the institution that has the self rostering incentive.

On the other hand, organizations from the manufacturing sector are not faced with the attraction and retention problem at a magnitude that is as high as that recognized in the health sector and thus, there is no pressure from other like institutions to introduce the self rostering work system on the basis of solving such a problem.

Organizational adaptation theory

According to this theory, organizations adopt self rostering in order to respond to the characteristics of the internal organization environment. Through the expert interviews, it was deduced that the health care sector has an internal environment that is characterized by more part time employees. Therefore, this kind of environment facilitates for the adoption of flexible work practices such as self rostering.

This is not the case in the manufacturing sector as there are not as many part time workers in this sector. And so, the likely cause for the lower magnitude of self rostering in this sector as compared to the health sector.

High commitment theory

This theory stresses the need to adopt work systems such as self rostering in order to increase employee commitment in the organization. In looking at the health sector, it has been identified that a retention problem exists. This retention problem could be attributed to a lack of commitment that exists amongst employees in these organizations. Therefore, in order to improve this problem, health institutions have adopted the self rostering work system to increase employee commitment to the firm which can consequently lead to higher retention levels.

On the other hand, as noted earlier, the manufacturing sector is not as hard hit by the retention problem as the health sector and thus less urgency for companies in this sector to implement systems that are aimed at increasing commitment.

Situational theory

In accordance with this theory, self rostering is implemented on the premise of improving an organization once a particular situation arises that calls for the system's implementation. In the case of the health care organizations, the situation of low attraction and retention arose and this is what led to the adoption of the self rostering work practice.

This situation was not faced in the manufacturing sector and therefore, self rostering is less prevalent there. However, if such a situation arises, it is possible that this sector will as well experience the adoption of such systems such as self rostering.

In looking at all four theories, it is noted that all the theories can explain reasons attributed to the higher prevalence of self rostering in this sector. However, this research's concern was to exceed the above scope (scope also shown in figure 8) and explore the effectiveness of the work system following its adoption. This is shown below.

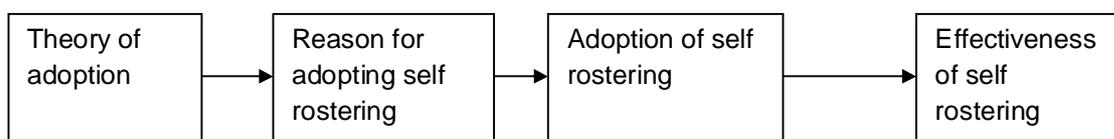| Theory of adoption | → | Reason for adopting self rostering | → | Adoption of self rostering | → | Effectiveness of self rostering |

Figure 9: The scope of the thesis

However, it was discovered in the research that despite there being a higher prevalence of self rostering in the health sector, it did not mean that this sector was more suitable and showed effective results post implementation of the work system. This is because the effectiveness of self rostering is not directly linked to the adoption of the system. There are in fact factors that determine whether or not self rostering is effective irrespective of the organization that adopts it. This is illustrated below.
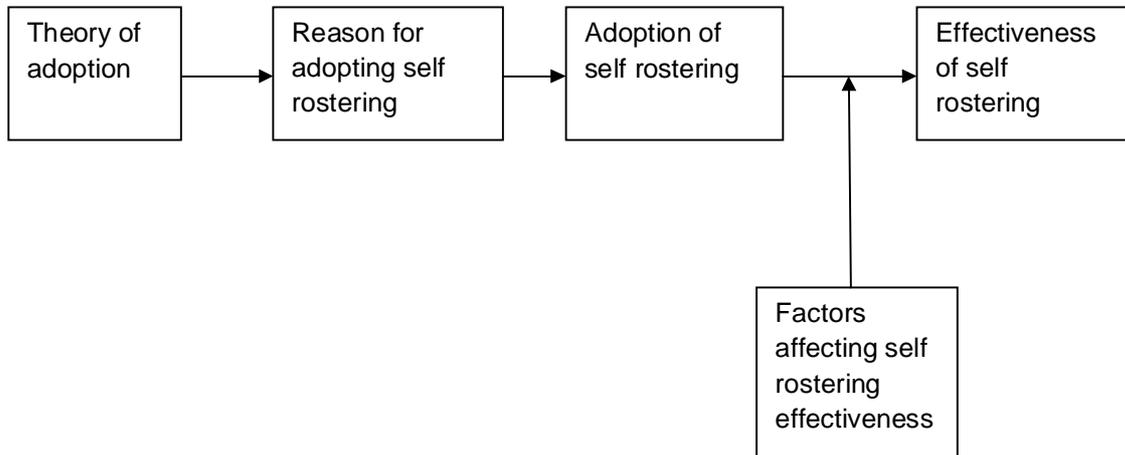
```
┌──────────────┐      ┌──────────────┐      ┌──────────────┐              ┌──────────────┐
│ Theory of    │ ───▶ │ Reason for   │ ───▶ │ Adoption of  │ ────────┬──▶ │ Effectiveness│
│ adoption     │      │ adopting self│      │ self rostering│        │    │ of self      │
│              │      │ rostering    │      │              │          │    │ rostering    │
└──────────────┘      └──────────────┘      └──────────────┘          │    └──────────────┘
                                                                       │
                                                          ┌──────────────┐
                                                          │ Factors      │
                                                          │ affecting self│
                                                          │ rostering    │
                                                          │ effectiveness│
                                                          └──────────────┘
```

Figure 10: Explaining the cause of self rostering effectiveness

The above figure (figure 10) indicates that it is possible to have higher adoption and thus prevalence of self rostering in one sector, but the effectiveness of the system depends on some factors which were identified earlier.

6. CONCLUSION

On the basis of all sections of this research, one can conclude this study by clearly stating the answer to the central research question – "What factors affect the effective use of self rostering in the Western European health and manufacturing sectors?"

It is evident that there are indeed a number of factors that influence the effectiveness of the self rostering work system. The factors that have been revealed in this study have emanated from existing literature, and practicing experts.

Factors

It has been discovered that some factors that have been highlighted by existing literature as self rostering stimulants are not acknowledged by some self rostering experts. In particular, organizational structure and gender-both literature based factors, have been disproved by experts as having any influence on self rostering. On the other hand, the experts have agreed with ten other literature based factors namely: external environmental pressures; adaptation period; type of employee; type of manager; size of self rostering group; organizational power relations; level of collegiality; individual focus, employee's level of knowledge about the self rostering system and heterogeneity and homogeneity within the self rostering group. The experts additionally add five more factors which they perceive as key influences on the system's effectiveness namely: adequacy in communication; Initial employee acceptance of the work system; The use of a pre-pilot and post-pilot measurement scheme; Gradual introduction of the system; and Availability of supportive self rostering technical solutions/ software. These factors are illustrated in the table below.

Only literature based factors	Consensus based factors	Only expert based factors
- Gender - Organization structure	- External environmental pressures - The adaptation period - Type of employee - Type of manager - Size of the self rostering group - Organization's power relations (e.g dual commitment culture is necessary). - Level of collegiality - Individual focus - Employee's level of knowledge about the self rostering system. - Heterogeneity and homogeneity within the self rostering group	- Adequacy in communication about how the system works - Initial employee acceptance of the work system - The use of a pre-pilot and post-pilot measurement scheme - Gradual introduction of the system - Availability of supportive self rostering technical solutions/ software

Table 9: Complete list of factors acknowledged by the research.

All the raised factors, in particular the ones that seem to be in accordance with both literature and expert interview findings, play a role in shaping the effectiveness of self rostering in all companies that adopt this work time practice.

Health vs. manufacturing sector

Whilst acknowledging the highlighted factors, the research has also discovered that the prevailing higher magnitude of self rostering in the health sector does not imply that this sector has more of these factors, however, this higher prevalence is a result of the existing individualistic cultures and a higher demand for attraction and retention mechanisms that have led to a mere faster progression rate of the system's adoption in the health sector. Despite this, the adoption does not guarantee effectiveness of the self rostering work system as this is dependant on the availability of the highlighted effectiveness factors. It can thus be conclusively said that self rostering effectiveness is achievable in other sectors such as the manufacturing sector for as long as the factors raised in this research are present.

Limitations

Like many other researches, this one also had some limitations that can invariably raise questions about the reliability and validity of the study. Due to the novelty of the subject of self rostering, it was not easy to find a larger sample size of experts than the ones comprising this research. The small sample size can however lead to weaker reliability of the study because it is unknown whether some factors would be approved or not following more discussions with more experts.

Further, no literature was found concerning the higher prevalence of self rostering in the health sector. Therefore, the research only relied on expert based opinions concerning this issue which also poses a validity and reliability problem.

It would therefore be recommended that future research duplicates this study with a larger sample of respondents to further confirm the factors that have been noted in this study as stimulants to effectiveness. In addition to this, it is suggested that future research ensures that the applicability of self rostering is indeed possible in the manufacturing sector by carrying out a case study research in organizations that belong to this sector thereby testing the findings of this research.

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APPENDICES

Appendix 1. Interview protocol

Qualitative Interview

The use of semi structured interviews has been chosen as most suitable for the explorative study of self rostering in general and to explore the factors that affect its effectiveness.

According to a source on the internet *this technique is used to collect **qualitative** data by setting up a situation (the interview) that allows a respondent the time and scope to talk about their opinions on a particular subject. The **focus** of the interview is decided by the researcher and there may be areas the researcher is interested in exploring.*

Based on the above, not all questions can be formulated in advance and therefore, only an indication of the key questions to expect can be provided before hand. These questions are as follows:

INTERVIEW QUESTIONS

PART A.

General self-rostering

1. What are the advantages of self-rostering?

2. What are the disadvantages of self-rostering?

Developing a self-rostering system

3. How do you create a self-rostering system? Which factors do you have to take into consideration when developing a self-rostering system?

4. Who should you involve in the self-roster developing process?

5. What important characteristics and qualities should a self-rostering group have?

Implementing self-rostering

6. Which factors do you have to take into consideration when implementing a self-rostering system?

PART B.

Factors affecting self rostering effectiveness

General

1. Do you agree with the literature based list of factors that are assumed to affect self rostering's effectiveness? Please elaborate your answers by giving your opinions on each factor.

2. From your experience, what (extra) factors influence whether or not self rostering is effective following implementation?

3. From the factors we have discussed, which of them do you perceive as most critical in determining the outcome of self rostering?

4. Can you list the factors affecting self rostering effectiveness in order of significance?

5. Why is self rostering more prevalent in the health sector than others, do you perceive any unique enforcing factors of self rostering in this sector?

6. Do you think that self rostering can work in a mechanized sector such as the manufacturing sector? If so, why? If not, why?

7. What type of organizations do you perceive as likely to achieve a successful self rostering outcome?

8. Is there a likelihood of seeing this method being used at a higher magnitude in the future?

Questions formulated on the basis of contingency theoretical findings

Environmental level based questions

1. Do you consider most labour related policies (e.g government policies and laws, ILO regulations) as supportive to the self rostering ideology?

2. What kind of external environment do you consider as friendly towards the self rostering system?

Internal level based questions

1. Is the asymmetrical relationship between employers and employees considered as an inhibiting factor to the success of self rostering? Does self rostering require more autonomy and individualism than it has in its real form?

Individual level based questions

1. What kind of characteristics would you look for in a candidate applying as self rostering manager? Would you look for any unique characteristics?

2. Do gender, age, ethnicity and race play a role in self rostering effectiveness? To what extent do they impact self rostering effectiveness?

Appendix 2. Interview responses

2 (a).

Interview respondent: Esther Segers

Company name: Dehora Consultancy Group

Job position: Sales Manager

Theoretical based factors	Interviewee opinion
Adaptation period	• Agree- Adaptation period of 6 – 12 months is advisable
Gender	• Not sure- Not certain of the generalized perception that females are more suitable for self rostering.
Type of employee	• Agree- Computer literate people are more suitable. Higher educated employees are suitable due to their perceived sense of responsibility.
Type of manager	• Agree- Managers who have good knowledge about change management, who can openly communicate, who motivate, and keep the organizations goals in mind.
Size	• Agree- The group should be between 15 and 80 people. This group should be able to choose its preferences.
External environmental pressures	• Agree- These pressures, especially government laws and union pressures are influencial on management systems. Therefore, these could also help in ensuring that self rostering is

	introduced in a right manner.
Organizational power relations	• Agree- Organization should have a dual commitment culture.
Organizational structure	• Disagree- Organizational structure is not exactly important because it is dependant on the group that is given self rostering.
Level of collegiality	• Agree- People have to be mutually interchangeable and considerate of one another.
Individual focus	• Agree- Facilitate as much as possible individual preferences.
Employee's level of knowledge about the self rostering system	• Agree- It would also be advantageous to have higher educated employees because this reduces problems of complaints due to lack of understanding of the whole self rostering procedure. It would be helpful to start an information session about what self rostering is. Then schedule a forum discussion where people are free to ask questions about the system and finally gaining insight as to what the people's opinion is about the system.
Heterogeneity and homogeneity within the self rostering work group	• Agree- However, it is not required that composition of employees be characterized in this nature if you have a high level of collegiality amongst employees.
Extra factors perceived by interviewee	• Involve employees in the process of making rules about self rostering. • Rules should be clear to all parties involved in the self rostering process. • Rules should be structured within the confines of the labour laws. • Employees should actually want and prefer this system before it is implemented. • Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system. • Give goodwill to employees who work

	less favorable hours.
List of factors in terms of importance	• Involve employees in the process of making rules about self rostering. • Rules should be clear to all parties involved in the self rostering process. • Employees should actually want and prefer this system before it is implemented. • Employee's level of knowledge about the self rostering system. • Individual focus. Facilitate as much as possible individual preferences.
Why self rostering is more prevalent in the health sector than other sectors	• Very difficult to attract personnel in the health sector and that is why this system is more prevalent there. The manufacturing sector is just moving from the shift system and is still adapting.
Whether or not self rostering can work in the other sectors or companies.	• Self rostering can work in other sectors given that the factors discussed earlier exist.
Type of organization perceived as likely to achieve a successful self rostering outcome	• Any organization that can allow for interchanging shifts.
The kind of external environment that supports self rostering	• The introduction of self-rostering is definitely facilitated by external support. Given that the concept is considered beneficial, governmental support would be of great help in receiving wide acceptance and speeding up the process of implementation.
Does self rostering require more autonomy and individualism than it has in its real form?	• It is impossible to offer total freedom in choosing working hours for the individual employee. That would create anarchy. The individual flexibility may be restricted depending on type of organization, e.g health care or retail etc. Also the level of current staffing is of importance. If staffing of the organization is truly very tight, then there is less room for alternative staffing solutions and hence, less degree of individual freedom. In summary, the discrepancy between the

	ideal and real self-rostering depends on the factors mentioned, but also on the employers' fear of losing control. Notably, most success stories about self-rostering are reported by organizations that have come very close to the ideal form.
Any unique characteristics that you would look for in a candidate applying as self rostering manager?	• One who has strong leadership qualities that can positively influence the rest of the work group involved in the process.

Summary of consistency of opinions with theory

The interviewee agreed with all factors raised in the theory with exception of gender and organizational structure.

Summary of additional factors as noted from the interviewee

The following factors were derived from the interview as additional to the theoretical based ones:

- Involve employees in the process of making rules about self rostering.
- Rules should be clear to all parties involved in the self rostering process.
- Rules should be structured within the confines of the labour laws.
- Employees should actually want and prefer this system before it is implemented.
- Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system.
- Give goodwill to employees who work less favourable hours.

2 (b).

Interview respondent: Sam Groen

Company name: FNV Bondgenoten

Job position: Senior Advisor on working times

Theoretical based factors	Interviewee opinion
Adaptation period	• Agree- A period of at least 9- 12 months would be advisable to allow for employee adjustment towards the work system's principles. However, it should be acknowledged that some

	employees could require a longer period depending on what they are accustomed to in terms of change.
Gender	• Not really- Instead of gender, it is age that seems to be a factor that leads to effectiveness of self rostering. Younger people are more suitable for self rostering as they tend to have individualistic thinking.
Type of employee	• Agree- It is important to have employees who have good negotiation skills. However, education level of these employees does not really have an impact on the outcome of self rostering effectiveness because it is more of a personality based system than an education based one.
Type of manager	• Agree- Managers who have good knowledge about change management, and are enthusiastic about the work system's success can stimulate its positive outcomes.
Size	• Agree- The group should not be too small and should have a minimum of 5-6 employees. However, one need not be concerned about a maximum number of employees in this group because it all depends on the personal relationships that exist amongst the group members.
External environmental pressures	• Agree- Unions are good pressure organizations that can enhance the effectiveness of this system. Further, consumer demands play a role in stimulating this system's implementation.
Organizational power relations	• Agree- Organization should have a dual commitment culture.
Organizational structure	• Agree- A flat organizational structure can enhance the smooth flow of self rostering implementation. But it should also be known that self rostering can itself create a flatter organizational structure once implemented.

Level of collegiality	• Agree- However, not strongly agree with this because the lack of collegiality would only entail that you organize the self rostering system a little more with other facilitating aspects, therefore it is still possible to achieve success I self rostering despite having a weak level of collegiality.
Individual focus	• Agree- self rostering is based on individualistic principles and thus should have an individual focus.
Employee's level of knowledge about the self rostering system	• Agree- However, this is not so important because other elements have a higher stimulating role of achieving self rostering effectiveness than education level of employees.
Heterogeneity and homogeneity within the self rostering work group	• No comment
Extra factors perceived by interviewee	• Social relationship between employers and employees has to be good. • A gradual introduction of the system can better predict its outcomes. • Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system. • Technical support systems (ICT) have to be good enough to support the system and lessen complexity issues as regards work time scheduling.
List of factors in terms of importance	• Type of employee (e.g employees who accept change; those who have negotiation skills). • Type of manager (e.g an enthusiastic self rostering manager can promote the system's effectiveness). • Organization's power relations (e.g dual commitment culture is necessary). • Individual focus (e.g this should be the focus of attention). • Social relationship between employers and employees has to be good. • Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system.

	Level of collegiality (e.g the higher the collegiality amongst employees, the more flexible they are willing to be in cases that necessitate them to cover up for a colleague's absence).
Why self rostering is more prevalent in the health sector than other sectors	• Culture is one reason why the self rostering system is more prevalent in the health care sector. In the health care sector there is a culture of working at a more individualistic level because rosters are infact already individually based. This differs from other sectors in which you note more collective thinking cultures. Therefore it is expected that the progression of this system is merely faster in health.
Whether or not self rostering can work in the other sectors or companies.	• Self rostering can work in other sectors given that the factors discussed earlier exist. However, the progression rate may not be as fast as the health sector due to the existing collective thinking which needs to be toward individualistic thinking.
Type of organization perceived as likely to achieve a successful self rostering outcome	• A service oriented organization is most suitable for this kind of work system as these do not seem to have enough autonomy for employees to choose working times.
The kind of external environment that supports self rostering	• The external environment could be neutral and self rostering can still succeed due to its positive employer-employee compromise features. This makes the system very likely to be accepted irrespective of a neutral external environment.
Does self rostering require more autonomy and individualism than it has in its real form?	• Yes. Wherever strong asymmetry is present, employees tend to hold on to collective principles more and more, thus making the system less admirable amongst employees.
Any unique characteristics that you would look for in a candidate applying as self rostering manager?	• Candidate should be able to think in individual terms, should be open to flatter organization culture, and should be able to think in a dual commitment

	way.

Summary of consistency of opinions with theory

The interviewee agreed with all factors raised in the theory with exception of gender and education level. The respondent additionally did not strongly agree with organizational structure and level of collegiality.

Summary of additional factors as noted from the interviewee

The following factors have been derived from the interview as additional to the theoretical based ones:

- Social relationship between employers and employees has to be good.
- A gradual introduction of the system can better predict its outcomes.
- Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system.
- Technical support systems (ICT) have to be good enough to support the system and lessen complexity issues as regards work time scheduling.

2 (c).

Interview respondents: Koos Oegema, Albert Van De Riet and Alexander Van Nijen

Company name: NS

Job positions: Koos Oegema- Senior Advisor HRM; Albert Van De Riet – HRM Systems advisor; Alexander Van Nijen- Project Manager

Theoretical based factors	Interviewee opinion
Adaptation period	• Agree- This should at least be 6- 12 months, however it not certain at which rate employees can adapt as this may vary.
Gender	• Disagree- It was assumed that women were more suitable for this system, however after carrying out an analysis, results showed that gender had no significant bearing on the systems application.
Type of employee	• Agree- It is important to have employees who have good negotiation skills.

Type of manager	• Agree- An enthusiastic self rostering manager who understands the system and can thus promote its effectiveness. Further, a manager who has leadership qualities can better fit the system's execution e.g when self rostering managers left their groups at NS, it was difficult to implement the system as employees seemed to resist new managers.
Size	• Agree- The smaller the group, the easier it is to ensure that wishes are met. However, the group should not be less than 5 as this would make the system's use redundant. The minimum size should be between 15- 20 employees.
External environmental pressures	• Agree- Unions that promote self rostering could help stimulate its effectiveness. This is the case at NS.
Organizational power relations	• Agree- Organization should have a dual commitment culture.
Organizational structure	• Agree- A flat organization structure promotes suitability of the work system, however, the system can also work effectively in a vertical organization as long as you have a top manager who supports the ideology.
Level of collegiality	• Agree- The higher the collegiality amongst employees, the more flexible they are willing to be in cases that necessitate them to cover up for a colleague's absence. However, this is more helpful in circumstances where there is no SR software to solve such problems.
Individual focus	• Agree- self rostering is based on individualistic principles and thus should have an individual focus.
Employee's level of knowledge about the self rostering system	• Agree- Self rostering is a complex system and thus requires one to understand it from both a technical

	perspective as well as a social perspective. Higher educated people are more likely to understand the complexities and accept the systems outputs.
Heterogeneity and homogeneity within the self rostering work group	• No comment
Extra factors perceived by interviewee	• Employee's level of trust in the employer (The more trust employees have in their management, the more likely that they will perceive the system as initiated for their benefit and not as a management cost initiative). • Availability of adequate supportive SR technical solutions/ software (Due to the SR system's complexity, technical solutions would promote easier facilitation of its execution and ensure transparency in the systems outputs). • Employees have to actually 'want' to use this type of rostering. • Gradual introduction of the system (This helps in building employee trust on both the system and management's intentions behind its implementation). • Strong belief in the concept from all stakeholders is necessary. • A good (informal) relationship between the SR-Project leader and the stakeholders.
List of factors in terms of importance	• The adaptation period that is given to self rostering employees (This should at least be 6- 12 months, however it not certain at which rate employees can adapt as this may vary). • Type of employee (e.g employees who accept change; those who have negotiation skills). • Type of manager (e.g an enthusiastic self rostering manager who understands the system and can thus promote its effectiveness). • Size of the self rostering group (e.g the smaller the group, the easier it is to ensure that wishes are met. However, the group should not be less than 5 as this would make the system's use

	redundant). • External environmental pressures (e.g Unions that promote self rostering and consumer demands). • Employee's level of knowledge about the self rostering system. • Employee's level of trust in the employer (The more trust employees have in their management, the more likely that they will perceive the system as initiated for their benefit and not as a management cost initiative). • Employees have to actually 'want' to use this type of rostering. • Gradual introduction of the system (This helps in building employee trust on both the system and management's intentions behind its implementation). • Strong belief in the concept from all stakeholders is necessary. • Last but not least: a good (informal) relationship between the SR-Project leader and the stakeholders.
Why self rostering is more prevalent in the health sector than other sectors	• This is because there are a lot of part time employees in hospitals as opposed to other sectors. Therefore, the flexible structure is more or less already in place in these institutions. Further, hospital settings allow for the possibility of varying the numbers of people needed at the workplace.
Whether or not self rostering can work in the other sectors or companies.	• Self rostering can work in other sectors given that the factors discussed earlier exist. However, the progression rate may not be as fast as the health sector due to the existing collective thinking which needs to be toward individualistic thinking.
Type of organization perceived as likely to achieve a successful self rostering outcome	• Organizations that have part time employees would have a more conducive environment for this system's introduction. E.g call centers would probably be best suitable for this type of work system since they have a lot of part time employees and allow for a lot of flexibility.

The kind of external environment that supports self rostering	• The external environment should consist of works councils and unions that support the system's initiatives. Further, labour laws need to be less restrictive as this would allow for optimum use of the system.
Does self rostering require more autonomy and individualism than it has in its real form?	• Yes it does. Employers are generally control addicts and thus find it difficult to give employees autonomy in many work aspects including work time scheduling. However, it is impossible to reach the ideal self rostering levels of autonomy and individualism because employees/ software will never be able to solve the self rostering puzzle fairly and thus management always has the last say.
Any unique characteristics that you would look for in a candidate applying as self rostering manager?	• Candidate should be not be a process manager, but a people manager. Further, he should possess leadership qualities and should be able to think in a dual commitment way.

Summary of consistency of opinions with theory

The interviewees agreed with all factors raised in the theory with exception of gender.

Summary of additional factors as noted from the interviewees

The following factors have been derived from the interview as additional to the theoretical based ones:

- Employee's level of trust in the employer (The more trust employees have in their management, the more likely that they will perceive the system as initiated for their benefit and not as a management cost initiative).
- Availability of adequate supportive SR technical solutions/ software (Due to the SR system's complexity, technical solutions would promote easier facilitation of its execution and ensure transparency in the systems outputs).
- Employees have to actually 'want' to use this type of rostering.
- Gradual introduction of the system (This helps in building employee trust on both the system and management's intentions behind its implementation).
- Strong belief in the concept from all stakeholders is necessary.

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2 (d).

Interview respondent: Johan Walters

Company name: KLM

Job position: Working times Manager

Theoretical based factors	Interviewee opinion
Adaptation period	• Agree- This should at least be 9- 12 months.
Gender	• Disagree- For instance pilots at KLM are male but are the ones that are most enthusiastic about using the self rostering system.
Type of employee	• Agree- It is important to have employees who accept change; those who have negotiation skills and are willing to change because they are not threatened by this change.
Type of manager	• Agree- An enthusiastic self rostering manager who understands the system and can thus promote its effectiveness. Further, a manager who has leadership qualities can better fit the system's execution.
Size	• Agree- the group should not be too big as this would risk the chances of anonymity of employees. Preferably, the size should consist of 35- 45 employees.
External environmental pressures	• Disagree- pressures usually result in resistance and these kids of pressures are no exception.
Organizational power relations	• Agree- Organization should have a dual commitment culture.
Organizational structure	• Agree- Flat organizational structure promotes suitability of the work system.
Level of collegiality	• Disagree- This does not have an effect on the system's effectiveness because

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	it is the size of the group that has a higher influence on effectiveness.
Individual focus	• Agree- self rostering is based on individualistic principles and thus should have an individual focus.
Employee's level of knowledge about the self rostering system	• Agree- However, the level of education does not really matter because it is more of an understanding of the system that counts. The understanding of the system is possible with both higher or lower educated staff.
Heterogeneity and homogeneity within the self rostering work group	• Agree- Group of employees should be heterogeneous in lifecycle and gender but homogeneous in terms of skills.
Extra factors perceived by interviewee	• The introduction of the system should be gradual and should not be complimented by various other changes. (Too much change at one time is not advisable as employees tend to resist in such circumstances). • The introduction of the system should entail a positive change for employees' work (do not introduce the system if it will not realize new and positive changes for employees). • Less external influenced rules as this restricts the ability to use the system at its full potential. • Good communication of the system's goals.
List of factors in terms of importance	• Type of employee (e.g employees who accept change; those who have negotiation skills and are willing to change because they are not threatened by this change). • Type of manager (e.g an enthusiastic self rostering manager that understands the system and can thus promote the system's effectiveness). • Size of the self rostering group (e.g the group should not be too big as this would risk the chances of anonymity of employees. Preferably, the size should consist of 35- 45 employees). • Organization's power relations (e.g dual commitment culture is necessary).

	• The introduction of the system should be gradual and should not be complimented by various other changes. (Too much change at one time is not advisable as employees tend to resist in such circumstances). • The introduction of the system should entail a positive change for employees' work (do not introduce the system if it will not realize new and positive changes for employees). • Good communication of the system's goals.
Why self rostering is more prevalent in the health sector than other sectors	• Not certain why this is the case. This sector does not seem to have any unique enforcing factors as regards implementation of the SR work system.
Whether or not self rostering can work in the other sectors or companies.	• Self rostering can work in other sectors given that the factors discussed earlier exist.
Type of organization perceived as likely to achieve a successful self rostering outcome	• One that has the factors that have been mentioned.
The kind of external environment that supports self rostering	• The external environment should consist of works councils and unions that support the system's initiatives. Further, labour laws need to be less restrictive as this would allow for optimum use of the system.
Does self rostering require more autonomy and individualism than it has in its real form?	• As much as it does require more autonomy, this can not be realized in practice because you always need restrictions in a workplace that can ensure that work demands are met.
Any unique characteristics that you would look for in a candidate applying as self rostering manager?	• Candidate should have interpersonal sensitivity, willingness to use the self rostering system and should be a leader who can resolve self rostering problems.

Summary of consistency of opinions with theory

The interviewees agreed with all factors raised in the theory with exception of gender and level of collegiality.

Summary of additional factors as noted from the interviewee

The following factors have been derived from the interview as additional to the theoretical based ones:

- The introduction of the system should be gradual and should not be complimented by various other changes. (Too much change at one time is not advisable as employees tend to resist in such circumstances).
- The introduction of the system should entail a positive change for employees' work (do not introduce the system if it will not realize new and positive changes for employees).
- Less external influenced rules as this restricts the ability to use the system at its full potential.
- Good communication of the system's goals.

2 (e).

Interview respondent: Peter Vos

Company name: AWVN

Job position: Senior consultant- Working times

Theoretical based factors	Interviewee opinion
Adaptation period	- Agree- A period of at least 6- 9 months would be advisable to allow for employee adjustment towards the work system's principles. However, it should be acknowledged that some employees could require a longer period depending on what they are accustomed to in terms of change.
Gender	- Disagree- Maybe this could be the case in smaller towns where work life balance and flexible working time is only appreciated by women. However, this is certainly not the case in big cities because a lot of male employees seem to want this system.
Type of employee	- Agree- It is important to have employees who are willing to handle responsibility.
Type of manager	- Agree- Managers who are good motivators, and are enthusiastic about the work system's success can

	stimulate its effectiveness.
Size	• Agree- The group should not be too small and should have a minimum of 5-6 employees. As regards a maximum number, one need not worry about this because self rostering software handles these difficulties.
External environmental pressures	• Agree- e.g self rostering should fit with the collective agreement to avoid any disruptions in its implementation.
Organizational power relations	• Agree- Organization should have a dual commitment culture.
Organizational structure	• Agree- A flat organizational structure can better suit this system because in a vertical structure there is always someone at the top who restricts employee autonomy.
Level of collegiality	• Agree- Employees should be closely knit and should be considerate of others.
Individual focus	• Disagree- both sides should be the focus and so making the people work together is the key.
Employee's level of knowledge about the self rostering system	• Agree- Irespective of the education level, employees who have a higher understanding of the system can promote its successful outcomes.
Heterogeneity and homogeneity within the self rostering work group	• Agree- Groups should comprise of people with different ages, different lifecycle etc.
Extra factors perceived by interviewee	• Employees should actually want to use this work system. • Necessity for a clear procedure regarding conflict resolution to resolve problems arising from disagreements in self rostering. • Labour conditions in collective agreements should not be restrictive to self rostering as they usually are. • Adequate communication about how self rostering works.

List of factors in terms of importance	• Organization's power relations (e.g dual commitment culture is necessary). • Level of collegiality (e.g the higher the collegiality amongst employees, the more flexible they are willing to be in cases that necessitate them to cover up for a colleague's absence). • Adequate communication about how self rostering works. • Labour conditions in collective agreements should not be restrictive to self rostering as they usually are. • Type of manager (e.g an enthusiastic self rostering manager can promote the system's effectiveness). • Adaptation period of 6- 9 months. • Necessity for a clear procedure regarding conflict resolution to resolve problems arising from disagreements in self rostering.
Why self rostering is more prevalent in the health sector than other sectors	• In health offices, most people have their own working time and thus have an already existing flexible choice. On the other hand, most manufacturing companies like to work in collective systems. Despite this, self rostering can still work in this sector given that it is implemented in its collective form".
Whether or not self rostering can work in the other sectors or companies.	• Self rostering can work in other sectors given that the factors discussed earlier exist. However, the progression rate may not be as fast as the health sector due to the existing collective thinking which needs to be toward individualistic thinking.
Type of organization perceived as likely to achieve a successful self rostering outcome	• Any organization that does not require collective styles of work. Cannot specify.
The kind of external environment that supports self rostering	• One that is not restrictive to self rostering and actually supports its goals.
Does self rostering require more autonomy and individualism than it has in its real form?	• Yes. Autonomy seems to be given only at the planning stage. After this stage, employers make all the decisions regarding who works when if the

	system doesn't realize all the organization's required labour.
Any unique characteristics that you would look for in a candidate applying as self rostering manager?	• One who has leadership skills, can motivate people to make the right decisions and can communicate the system's goals adequately.

Summary of consistency of opinions with theory

The interviewees agreed with all factors raised in the theory with exception of gender, individual focus and education level.

Summary of additional factors as noted from the interviewee

The following factors have been derived from the interview as additional to the theoretical based ones:

- Employees should actually want to use this work system.
- Necessity for a clear procedure regarding conflict resolution to resolve problems arising from disagreements in self rostering.
- Labour conditions in collective agreements should not be restrictive to self rostering as they usually are.
- Adequate communication about how self rostering works.

Appendix 3. Advantages of using a qualitative interview

Strength of using the qualitative method

1. **Positive rapport** between interviewer and interviewee. Very simple, efficient and practical way of getting data about things that can't be easily observed (feelings and emotions, for example).

2. **High Validity**. People are able to talk about something in detail and depth. The meanings behind an action may be revealed as the interviewee is able to speak for themselves with little direction from interviewer.

3. **Complex questions and issues can be discussed / clarified**. The interviewer can probe areas suggested by the respondent's answers, picking-up information that had either not occurred to the interviewer or of which the interviewer had no prior knowledge.

4. **Pre-Judgement**: Problem of researcher predetermining what will or will not be discussed in the interview is resolved. With few "pre-set questions" involved, the interviewer is not "pre-judging" what is and is not important information.

5. Easy to record interview (video / audio tapes).

Appendix 4. All extra factors proposed by respondents

Esther Segers

- Involve employees in the process of making rules about self rostering.
- Rules should be clear to all parties involved in the self rostering process.
- Rules should be structured within the confines of the labour laws.
- Employees should actually want and prefer this system before it is implemented.
- Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system.
- Give goodwill to employees who work less favourable hours.

Sam Groen

- Social relationship between employers and employees has to be good.
- A gradual introduction of the system can better predict its outcomes.
- Use a pre-pilot and post-pilot measurement scheme to predict its effectiveness before fully implementing the system.
- Technical support systems (ICT) have to be good enough to support the system and lessen complexity issues as regards work time scheduling.

Johan Walters

- The introduction of the system should be gradual and should not be complimented by various other changes. (Too much change at one time is not advisable as employees tend to resist in such circumstances).
- The introduction of the system should entail a positive change for employees' work (do not introduce the system if it will not realize new and positive changes for employees).
- Less external influenced rules as this restricts the ability to use the system at its full potential.
- Good communication of the system's goals.

Peter Vos

- Employees should actually want to use this work system.
- Necessity for a clear procedure regarding conflict resolution to resolve problems arising from disagreements in self rostering.
- Labour conditions in collective agreements should not be restrictive to self rostering as they usually are.
- Adequate communication about how self rostering works.

Koos Oegema, Albert Van De Riet and Alexander Van Nijen

- Employee's level of trust in the employer (The more trust employees have in their management, the more likely that they will perceive the system as initiated for their benefit and not as a management cost initiative).
- Availability of adequate supportive SR technical solutions/ software (Due to the SR system's complexity, technical solutions would promote easier facilitation of its execution and ensure transparency in the systems outputs).
- Employees have to actually 'want' to use this type of rostering.
- Gradual introduction of the system (This helps in building employee trust on both the system and management's intentions behind its implementation).
- Strong belief in the concept from all stakeholders is necessary.