Job Crafters Going Digital: A Framework for IT-Based Workplace Adaption

Angelina Clara Schmidt[a], Michael Fellmann[b] and Jakob Voigt
Institute of Business Informatics, University of Rostock, Rostock, Germany

Abstract: The changing world of work is leading more and more people to reflect on the meaning and organization of their work. Increased flexibility allows individuals to define and shape their own jobs. However, adapting one's job, which is referred to as job crafting, is a challenging manual task since many variables can be modified with unclear dependencies. Hence, to systematically promote job crafting behaviors, Job Crafting Information Systems (JCIS) were proposed a decade ago. However, up to now, it is highly unclear which IT-supported interventions could be implemented in such systems. Against this gap, we develop an integrated model that matches the different job crafting behaviors discussed in the literature with supporting and facilitating IT components. As a result of our literature review, we include the functional IT components recommendation, coaching, time management, and complaint management and identify gamification, simplification, prediction, and integration as important non-functional characteristics of JCIS.

1 INTRODUCTION

In a changing society shaped by globalization and digitalization, where individual and personal values are becoming increasingly important, the world of work is also changing. As a result, more and more people are beginning to reflect on the meaning and organization of their work. In recent years, the number of self-employed and employees with flexible, more individualized working conditions has increased (Jent & Janneck, 2016).

With increasing flexibility, work boundaries, meaning of work, and work identities no longer entirely determined by formal work requirements, employees have the freedom to define their jobs themselves (Wrzesniewski & Dutton, 2001). People with individualized working conditions often receive less support from colleagues and supervisors. Thus, the planning of work tasks, ergonomic workplace design as well as structuring of working time, breaks, and leisure time are shifting towards the individuals' responsibility (Jent & Janneck, 2016). In this regard, the work tasks and social interactions become the 'raw material' out of which employees construct their jobs (Wrzesniewski & Dutton, 2001).

This predominantly employee-driven way of reconstructing job design, also known as *job crafting*, offers a unique perspective on job redesign theory. Traditionally, job design or redesign has been seen as a top-down process where the organization creates jobs and selects people with the appropriate knowledge, skills, and abilities for those jobs. The supervisors have been solely responsible for changing tasks or roles. In contrast to this job crafting offers an alternative bottom-up approach at the individual level (Tims & Bakker, 2010). Without diminishing the significance of the general organizational top-down design (Peng, 2018), job crafting creates an employee-centred, bottom-up concept with great potential, e.g., to better accommodate an individual's preferences for working pace, place, and space for strength-use and long-term stress reduction. It differs from earlier concepts in that it focuses on proactive changes in job design that do not have to be negotiated as specific arrangements with the organization (Tims & Bakker, 2010), and in this sense, can be considered as an approach for the ex-post adaptation of the job. Although it is discussed that job crafting can be formally approved or unapproved (Berg et al., 2008), the different typical

a[ID] https://orcid.org/0000-0002-6967-4287
b[ID] https://orcid.org/0000-0003-0593-4956

703

forms of job crafting are usually not even noticed by the supervisor (Tims & Bakker, 2010) (sometimes also referred to as "bottom-up leadership").

Based on the definition of a job as a collection of tasks and interpersonal relationships assigned to a person in an organization (Berg et al., 2008), there are different dimensions that characterize job crafting. Generally, the sum of all the resulting physical and cognitive changes that individuals make to the task or relationship boundaries of their work is referred to as job crafting (Wrzesniewski & Dutton, 2001). Another approach postulates that employees take individual action to counteract the imbalance between stressful work demands (their costs) and compensating work resources (their benefits) by proactively shaping the characteristics of their jobs and tasks (Tims & Bakker, 2010). In this way, job crafting is an activity, and those who execute it, also called job crafters, read, interpret, and modify cues to the boundaries of work (Wrzesniewski & Dutton, 2001). Though these activities may be performed as a continuous process (Peng, 2018), job crafting does not explicitly involve only long-term solutions. It can also occur in a short-term form (Tims & Bakker, 2010) and complements the material rewards of work with intangible rewards such as well-being or personal values (Peng, 2018). However, executing job crafting is inherently complex and challenging since many interdependent variables may be modified, such as one's *pace* of work (e.g., rapid progress in a single project or multi-tasking), *place* of work (e.g., remote or onsite) or *space* of work (e.g., used files and folders, tools or rooms).

IT-supported interventions offer the opportunity to improve the productivity and health of employees. In the direction of job crafting, so-called *Job Crafting Information Systems* (JCIS) were proposed a decade ago (Kehr et al., 2014) as a way to promote job crafting behaviors systematically. To do so, they should be tailored to strengthen the individual's ability to shape their working environment, e.g., to improve strength-use or alleviate causes of stress. By applying high-scalable and cost-efficient solutions, employees' individual health, productivity, and overall organizational performance could be improved (Kehr et al., 2014). These are usually based on findings from the theoretical foundations of psychology and the behavioral sciences (Xu et al., 2018). However, concrete implementations of JCIS are still rare, as the focus so far has been on clarifying the requirements and overarching abstract principles of such systems (Kehr et al., 2014). What is greatly lacking is a set of concrete features for such systems that could inform the creation of dedicated JCIS

systems or the extension of existing enterprise systems with JCIS features. Against this research gap, we analyze how research activities have developed since the introduction of the job crafting concept, which behaviors constitute job crafting, how job crafting behaviors can be supported and promoted by IT-supported interventions, and which perspectives and limitations of IT support exist. Based on a literature analysis, we present an integrated model that correlates the different behaviors discussed in the literature with the existing supporting and facilitating IT components. We hope that our model will inform and inspire the addition of JCIS features to existing enterprise systems as well as the development of future JCIS systems.

2 JOB CRAFTING THEORIES

This paper examines the current state of research on interventions and components for JCIS. Starting from the general behaviors that constitute job crafting, the aim is to find out how these are supported by IT or how IT could support these behaviors. For this reason, the fundamental theories of job crafting are presented in this section, as they are essential for the development of suitable IT systems. The different theories are integrated into our model.

2.1 Original Job Crafting Theory

Wresniewski and Dutton define job crafting as the physical and cognitive changes and actions that individuals take at the task or relationship boundaries of their work to shape, form, or redefine their jobs (Wrzesniewski & Dutton, 2001). Job crafting is divided into *task, cognition*, and *relationship crafting*. *Task crafting* describes changes in task boundaries, for example, by adjusting the form or number of tasks or activities. *Cognition crafting*, on the other hand, focuses on shifts in cognitive work boundaries, i.e., how work is viewed. *Relationship crafting* refers to adjusting relationship boundaries and interactions with others at work. These actions influence work meaning, as the individual's understanding of the purpose of their work and work identity, as well as the way individuals define themselves at work (Wrzesniewski & Dutton, 2001). Figure 1 shows the methods that can be used to perform the different subforms of crafting. These methods are included as the core of our model.

Task crafting is characterized by changes in the type of work tasks, the task domain, or the number of work tasks (Wrzesniewski & Dutton, 2001). The way

work tasks are performed is also important (Berg et al., 2008). *Relationship crafting* can be done by changing the quality or quantity of relationship interactions and adjusting the interaction partners and one's own interaction being (Wrzesniewski & Dutton, 2001). In addition, the frequency of interaction can be adjusted (Tims & Bakker, 2010). *Cognition crafting* aims to create a changed view of work as individual parts or as an integrated whole (Wrzesniewski & Dutton, 2001). Reflection on the work situation (Kehr et al., 2014) as well as the inner reorientation of the social purpose of work to include personal passions (Berg et al., 2008) can lead to changes in the personal perspective.
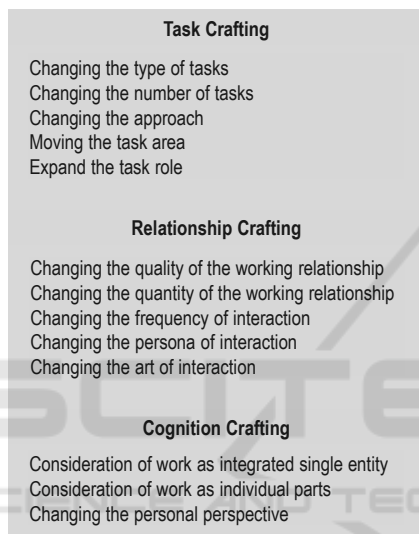
Task Crafting

Changing the type of tasks
Changing the number of tasks
Changing the approach
Moving the task area
Expand the task role

Relationship Crafting

Changing the quality of the working relationship
Changing the quantity of the working relationship
Changing the frequency of interaction
Changing the persona of interaction
Changing the art of interaction

Cognition Crafting

Consideration of work as integrated single entity
Consideration of work as individual parts
Changing the personal perspective

Figure 1: Core of the model.

2.2 Demand Resource Theory

A completely different approach than the original theory is taken by the representatives of the demand-resource (DR-)theory. First described by Tims and Bakker in 2007, this theory assumes that job crafting is a specific form of proactive behavior in which employees initiate changes in work demands and work resources (Tims & Bakker, 2010). The founders of this theory also see the approach as a form of cost-benefit analysis in which employees take individual actions to strike a balance between more burdensome demands resp. *costs* and more compensating resources resp. *benefits* (Tims & Bakker, 2010). Work demands are physical, social, or organizational aspects of work that require constant effort (Lee et al., 2018). The counterpart to this, *work resources*, are all the means that help the individual achieve the desired work goals (Lee et al., 2018). The goal is to minimize

stress-increasing work demands, increase stress-reducing ones, and expand one's own work resources.

According to Tims and Bakker, job crafting can be divided into four categories based on work demands and resources (Tims & Bakker, 2010). These include (i) the increase of (challenging) work demands, (ii) the reduction of hindering work demands, (iii) the increase of social work resources, and (iv) the increase of structural work resources (Tims & Bakker, 2010). *Challenging work demands* are those that challenge and fulfill the employee positively. On the other hand, obstructive or hindering work demands are often externally defined demands that interfere with or disrupt the employee's work in an unpleasant way. *Social work resources* are all of the employee's social skills and abilities that they can use to achieve their work goals. *Structural work resources*, on the other hand, are all the material or technological aids that help to achieve goals.

2.3 Approach Avoidance Model

Due to the widespread acceptance of the theories described so far, there have been few additional attempts to categorize or describe job crafting behavior. One approach that combines the two most common theories is the *approach-avoidance model* proposed by Zhang and Parker (Zhang & Parker, 2019). It derives from Andrew Elliot's theory of approach-avoidance motivation, which is widely accepted in the behavioral sciences and suggests that people tend to move towards positive end points and against negative end points (Elliot, 2006). Movement against a positive end point represents approach behavior and is approach-motivated. Movement towards a negative end point, on the other hand, represents avoidance behavior and is therefore avoidance-motivated.

A first attempt to build on this theory was the so-called *role-resource-avoidance approach* by Bruning and Campion (2018), which is a combination of the role-resource theory (or demand-resource theory) and the approach-avoidance approach but does not include the original theory by Wrzesniewski and Dutton (Bruning & Campion, 2018). This theory classifies job crafting behaviors along two dimensions, each with distinct characteristics. The first dimension ranges from role (or demand) to resource crafting. The second dimension ranges from approach to avoidance crafting. The different manifestations of job crafting can now be classified by allocating the different sectors between approach and demand, avoidance and demand, approach and resources or avoidance and resources. From their

position, it can be deduced whether each behavior is more need- or resource-oriented and if it represents an approach or avoidance behavior.

In contrast to Bruning and Campion, Zhang and Parker's model also incorporates the original theory, thus providing a holistic approach. Approach and avoidance crafting function as two distinct overarching constructs, resulting in a model with three hierarchical levels (Zhang & Parker, 2019). The first level includes job crafting orientation and distinguishes between approach and avoidance (Zhang & Parker, 2019). The second level concerns the form of job crafting and, according to the original theory, distinguishes between task crafting, relationship crafting, and cognition crafting (Zhang & Parker, 2019). The third level describes the job crafting content and distinguishes between demands and resources (Zhang & Parker, 2019). The idea behind this is that each job crafting behavior fulfills exactly one characteristic at each level and can thus be clearly categorized.

3 IT SUPPORT FOR JOB CRAFTING

Research in the area of job crafting has so far mainly focused on clarifying the theoretical foundations, requirements, and abstract overarching design principles, while concrete implementations are lacking (Kehr et al., 2014) (cf. also Section 2). Therefore, in the following we exemplary present few existing JCIS and then analyze which components already used in other systems can be additionally adapted for enriching existing systems with JCIS-features or to create dedicated JCIS.

3.1 Literature Analysis

The research team has analyzed the literature using the databases Scopus and AIS eLibrary. As search terms, we used "job crafting" and combined it with "information system" or "IT system", "software" and other variants denoting IT. The search delivered 42 results in AISeL and 91 results in Scopus, whereby nine results have occurred in both databases. The result set of 124 sources was further sorted. Sources written in English or German were included. Due to the strong overlap with disciplines such as psychology, sociology, and behavioral sciences, articles that were more concerned with psychological studies on the causes and consequences of job crafting and focused on the connection with

behavioral or personality-related variables were excluded. We included articles that specifically focus on developing JCIS as well as articles that investigate the influence of other IT tools on job crafting. As a result, 15 articles were identified as relevant for our context, which will be described in the following.

From 2014 onwards, job crafting research with a growing relevance of IT and JCIS began. In their research-in-progress works Kehr et al. identified the need for validated design principles for JCIS (Kehr et al., 2013) and started to develop an evaluation model (Kehr et al., 2014). Continuous, repeated use of JCIS seems to be fundamental for the effectiveness of the app (Kehr et al., 2014).

One attempt to support job crafting through IT is the *Job Crafting Coach* by Jent and Janneck: An online coaching application with gamification elements. The extent to which these elements promote user motivation was investigated (Jent & Janneck, 2016). Gamification is the use of game design elements in non-game contexts to increase user motivation and activity (Jent & Janneck, 2016). The application aims to educate users about the benefits of job crafting through various lessons, some of which can be unlocked, and to support this with gamification elements (Jent & Janneck, 2016). However, the analysis of the system is reduced to the influence of the gamification elements and less to the overall technological design of the software. Important findings of the study are that the elements indeed had varying degrees of influence on learning success and supported continuous use of the application (Jent & Janneck, 2016). It can be deduced from this that those elements successfully used on educational platforms are also suitable for JCIS (Jent & Janneck, 2016). While some gamification elements proved to be beneficial and popular, others had a less positive effect. For example, countdowns seem rather unsuitable as they create time pressure and stress and thus counteract the actual goals of the applications (Jent & Janneck, 2016). The same applies to ranking lists, which create social pressure (Jent & Janneck, 2016). On the other hand, elements such as progress bars, badges, unlocking exercises, and a score accumulation system were rated positively (Jent & Janneck, 2016). In addition, study participants indicated that they would also feel motivated by quizzes or a star rating system, but not by a tip of the day or a badge for using the app on consecutive days (Jent & Janneck, 2016). It can be concluded that gamification, as in other applications, can play an important role in the design of JCIS.

The effectiveness of an electronic job crafting intervention via an electronic learning environment,

which aims to stimulate task, relationship, and cognition crafting, was examined by (Verelst et al., 2021). The design of an e-job crafting intervention is supposed to be usable as well as persuasive to reach a good adherence (Verelst et al., 2021).

Apart from the aforementioned approaches, the remaining literature did not aim to develop a JCIS but provides interesting insights regarding the interplay between IT and job crafting. IT is a key factor in the recent revival of job crafting (Lee et al., 2018).

Xu et al. integrate job crafting and proactive behavior theories to conceptualize the antecedents of collaborative job crafting (Xu et al., 2018). Therefore, they highlighted technological characteristics (e.g., technological reconfigurability, system integration) as important elements that impact employees' motivational states, which subsequently affect collaborative job crafting (Li et al., 2022). In another study, Xu et al. show that IT can increase work meaningfulness if the characteristics of the technologies include reconfigurability and customization to enable employees to redesign their jobs (Xu et al., 2023). Technology reconfigurability describes how a user perceives that IT is implemented in a way that enables the adaption of IT features during use (Xu et al., 2023), whereas customization is the way that the system meets the users' functional needs of the user to perform tasks (Xu et al., 2023).

Research started to investigate "adoption job crafting", meaning "the active and goal-directed use of technology and other sources of knowledge to alter the job and enhance a work process" (Bruning & Campion, 2018), e.g., automating tasks to reduce potential errors (Mansour & Nogues, 2022). In doing so, workload reduction could increase opportunities for task-enhancing job crafting (Mansour & Nogues, 2022), e.g., alter the time or energy spent on tasks, drop old or add new tasks, or change the nature of tasks (Berg et al., 2013).

The findings of Mansour and Nouges suggest that the adoption of new technology is highly dependent on the level of supervision and technical maintenance devoted to the new technology (Mansour & Nogues, 2022). To avoid creating additional problems and workload, employees should not be too involved in the maintenance of the software (Kehr et al., 2013). Users adopt technology that helps them to do their job (Lee et al., 2018), when it can improve work performance without much effort (Kehr et al., 2013).

A qualitative pilot study by Gennaro et al. examined the effect of work digitalization and information and communication technology (ICT) on job crafting by exploring public sector workers' attitudes towards technology through semi-structured interviews. This study provides indications that individual attitudes are significant drivers of the job crafting process. The workers who have a positive attitude towards technology are the ones who modify their jobs (Gennaro et al., 2022). Perceptions of utility and ease of use influence attitudes (Gennaro et al., 2022), further highlighting the importance of these aspects for new systems.

Lee et al. examine, among other things, compatibility and actual use as characteristics of technology. Their field survey data indicates that these characteristics appear to shape the individual job crafting behavior. Compatibility means that technology can only be used well if the features support what the users need to execute their tasks (Lee et al., 2018), which is in line with the definition about technology customization mentioned before. Furthermore, IT can only be influential if it is actually used (Lee et al., 2018).

Apart from that, Blazejewski and Walker explore a potentially critical aspect of digitalization: they seek to understand job crafting practices when digitalization processes might reduce perceived autonomy through an empirical organizational case study of the introduction of a new system in a retail group. Their results show that employees try to reduce their digital work stress by attributing a function to the technological system in use that does not conflict with their professional self-perception (Blazejewski & Walker, 2018).

According to Batova's research, the motivation to use a component content management system also increased when users were motivated to do job crafting (Batova, 2018). Consequently, job crafting and a potential JCIS can also positively impact user activity in other systems. It is also known from the use of customer relationship management systems that job mechanisms can work in existing systems (Xu et al., 2018). For example, employees can change their schedule, focus on clients and tasks that yield high returns or minimize stress, or rate tasks and clients with different levels of importance and urgency (Jent & Janneck, 2016). It can be deduced from this that those components already integrated into an existing corporate infrastructure system could also be adapted for a potential JCIS.

ICT can be used to increase job resources and tackle job demands, increasing overall occupational well-being (Tarafdar & Saunders, 2022). Tarafdar and Saunders conceptualize and define "ICT-enabled job crafting as the use of ICT to shape the task, relational, and cognitive aspects of work" (Tarafdar & Saunders, 2022). Peters et al. showed that low-code development platforms enable job crafting forms for

business unit developers as an example of ICT-enabled job crafting (Li et al., 2022). Moreover, being able to "bring your own device" is expected to have an influence on job crafting (Wang et al., 2018). Electronic human resource management can also be a stimulus for employee initiative (Zhou et al., 2021).

Summarizing the results so far, research on dedicated JCIS is very scarce and JCIS are still an (almost) non-existent category of enterprise systems. Therefore, it seems to be more promising to analyze the literature for relevant functional IT components that could be used to extend existing enterprise systems with JCIS-features or to build dedicated JCIS and which non-functional characteristics should be considered in system design (cf. Section 3.3).

3.2 Barriers and Influences

Nowadays, job crafting is known to be practiced in a variety of organizations and professions (Berg et al., 2008). However, whether an employee can engage in job crafting depends on various influencing factors. These are determined either by the structure of the organization and the task design, by the technical possibilities of the organization, or by the personality of the employee.

Wrzesniewski and Dutton suggest that economic constraints give or deny individuals with different personal resources the opportunity to evaluate, interpret, and act within job categories (Wrzesniewski & Dutton, 2001). For example, differences in professional status, standards and requirements, as well as organizational values, beliefs and norms, may influence the ability to engage in job crafting (Wrzesniewski & Dutton, 2001). Among the most frequently mentioned job characteristics in the literature that have a significant influence on job crafting are the degree of task interdependence and the degree of autonomy (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019).

The lower the interdependence of tasks and the less complex the task profile of the organization, the more likely it is that job crafting is possible. The same applies to the degree of autonomy. The higher the degree of autonomy granted to the employee, the greater the possibilities for job crafting. Other organizational aspects that can influence employees' job crafting behavior are workload, work resources and demands, and the manager's leadership style (Zhang & Parker, 2019).

In addition to these organizational aspects, the personality of the employee plays a crucial role. There are several personality traits that favor the adoption of job crafting behaviors. In particular, proactive personality is considered to be a good predictor of job crafting (Parker et al., 2010; Peng, 2018; Tims & Bakker, 2010; Zhang & Parker, 2019). Proactive behavior in this context means getting things done, anticipating and avoiding problems or seizing opportunities when they arise (Parker et al., 2010).

Besides proactive behavior, there are other personality-related predictors of job crafting. These include, for example, self-efficacy and self-control (Tims & Bakker, 2010). Demographic parameters such as age can also influence behavior (Jent & Janneck, 2016). In addition, the individual need for a positive self-image, work experience and human connection play a role (Niessen et al., 2016). Extroversion, openness, psychological capital, work engagement and organizational involvement are also mentioned in the literature as positive influencing factors (Zhang & Parker, 2019).

Besides these more facilitating personality traits, however, there are also less facilitating traits. For example, employees who already suffer from burnout, depression or excessive demand on their work role engage in significantly less job crafting (Zhang & Parker, 2019). Furthermore, it is conceivable that demographic parameters such as age also have a negative influence here (Jent & Janneck, 2016). Neuroticism is also mentioned as a negative factor (Zhang & Parker, 2019).

In addition to the organizational and personality-related aspects, the technological environment is also becoming increasingly relevant as digitalization progresses. Through the literature review described in section 3.1, the following factors could be identified. The organization's internal IT-infrastructure and certain IT characteristics play a decisive role here. Key IT characteristics include reconfigurability, system integration (Xu et al., 2018; Xu et al., 2023), compatibility (Lee et al., 2018; Xu et al., 2023) and ease of use (Gennaro et al., 2022).

A more flexible, quickly reconfigurable, and integrative IT system offers employees more opportunities for job crafting, e.g. by adjusting settings. The better an organization's various IT systems are integrated, the smoother work processes involving several people will run. An adaptable design of the IT landscape is also of central importance with regard to the integration of JCIS. Which approaches for JCIS already exist and how a JCIS should be designed is discussed in the following.
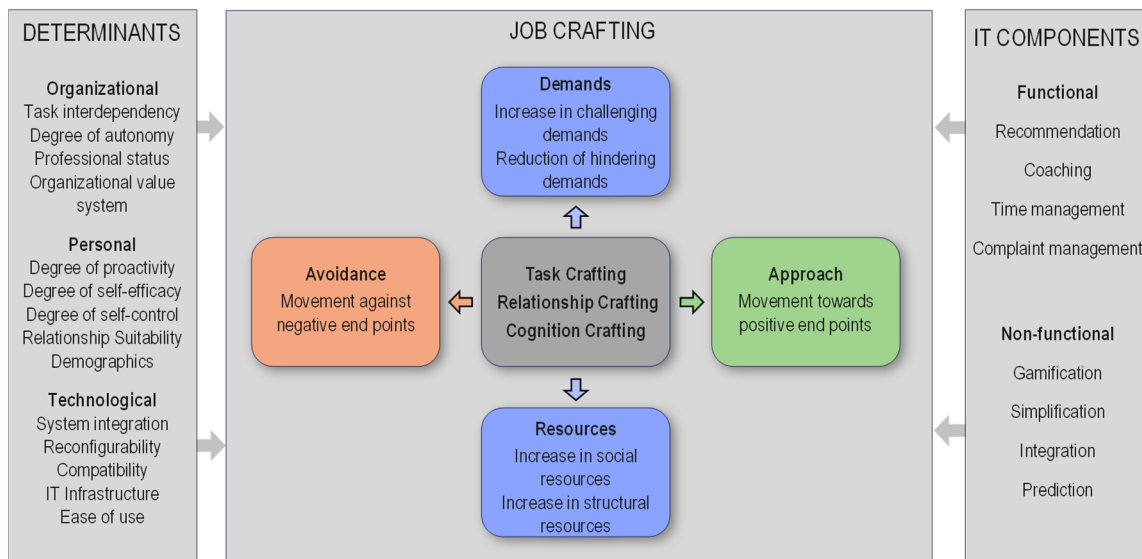
Figure 2: Integrative job crafting model.

3.3 Analysis of IT Components

Based on the identified literature (cf. Section 3.1), several workshop meetings among the author team were conducted to elicit relevant components based on the findings in the literature. Based on the discussions in the meetings, four possible functional IT components of JCIS emerged, which we explain in the following:

- Recommendation
- Coaching
- Time Management
- Complaint Management

As a proactive component, the *recommendation* system should make suggestions to the user based on his or her usage activity. For example, appropriate work items could be recommended that match the users' preferences or strengths. It could also recommend a particular task or the appropriate number of people to complete a task. This way, appropriate recommendations may also nudge less proactive users to engage in job crafting. Furthermore, it should be possible to predict the perceived stress of a task so that the application can suggest a balanced repertoire of tasks to the user.

The *coaching* component helps to raise awareness and provide training. The client should learn which job crafting behaviors exist and how to use them to gain an advantage. Furthermore, the client should learn how to train their cognitive mindset and the methods available to reduce stress at work. The learning should take place in different lessons, similar

to the Job Crafting Coach developed by Jent and Janneck.

The *time management* component, in line with the insights gained in the context of customer relationship management systems and similar systems (cf. Section 3.1), ensures that employees have a higher degree of autonomy in managing their time. In this context, time management means both free organization and time tracking. The aim is therefore to be able to freely allocate and document the time spent on different projects, but also to use the recommendation system to warn the user if they are working too much overtime.

Also derived from customer relationship management is the *complaint management component*. This is intended to let the user communicate concerns and problems within the organization, in order to proactively eliminate obstructive demands.

The identified functional components should operate as a combined unit rather than as independent sub-systems, thus supporting each other. Ideally, the user should not be able to distinguish which component or sub-system is currently being used. In addition, the JCIS as a whole should adhere to certain non-functional characteristics that have been shown to be beneficial. To this end, we identify four main non-functional characteristics:

- Gamification
- Simplification
- Prediction
- Integration

709

Jent and Janneck have already been able to demonstrate the benefits of *gamification* (Jent & Janneck, 2016). These seem essential for a system that is supposed to improve the work design of employees to ensure high user satisfaction, adequate user activity and positive long-term effects. *Simplification* should also be applied. A JCIS should be as detailed as necessary, but as simple as possible to avoid overwhelming users. Moreover, a JCIS should also have a *predictive* character and identify the needs of the customer as proactively as possible (*prediction*). This is particularly necessary for the recommendation components. Finally, a JCIS should have a high degree of technical embeddability and *integrability*. If possible, it should be able to be integrated into the company's existing IT infrastructure, run on the most common operating systems or even be executable as an add-on in other software.

Figure 2 summarizes the previous findings in an integrative model. The organizational, personal and technological influencing factors (cf. Section 3.2) are shown on the left and the influencing IT components on the right. Both sides act as drivers for the implementation of job crafting. In the center is an overview of all the possible job crafting methods that could be adopted by the employee. Our approach is that avoidance and approach are not superordinate constructs, but that different job crafting methods are complementary. At the core of the model are the behaviors identified in the original theory. Starting from this core, the work demands and resources are adjusted using a wide variety of methods. These can be changed through task crafting, relationship crafting or cognition crafting. In addition, the different methods of job crafting (including demand crafting and resource crafting) may represent a tendency towards avoidance or approach behavior, which we will show in the following section.

3.4 Mapping

Figure 3 shows the influence of the IT components on the different job crafting methods in the form of a matrix. For this purpose, the IT components are transferred to the matrix: Recommendation (R), Coaching (C), Time Management (TM) and Complaint Management (CM). Different symbols are used to illustrate whether one of the IT components has the potential to support the respective job crafting method (symbol) or not (no symbol). In addition, a traffic light rating system indicates whether the respective support is more of an *approach behavior (green circle)* or an *avoidance behavior (red triangle)*

or whether the method shows *forms of both variants (yellow square)*. All assignments have been made by the authors individually and discussed later on in workshops until a consensus was reached.

When looking at Figure 3, it is obvious that most methods of job crafting can be considered both as an approach and an avoidance behavior. Depending on the direction in which one adjusts, for example, the number of tasks or work relationships, the job crafter can *avoid* tasks or work relationships or *approach* new ones. On the other hand, viewing work as an integrated whole or as individual components, increasing challenging demands and any form of resource crafting represent approach behavior in each case. The only purely avoidance behavior identified was the reduction of hindering work demands. This means that for most behaviors, it is up to the job crafters if they prefer more approach-orientation or avoidance-orientation. This emphasizes the importance of a recommendation approach sensitive to the users' preference for approach or avoidance styles of job crafting behaviors.

Job Crafting Method	R	C	TM	CM
Increase in challenging demands	🟢			🟢
Reduction of hindering demands	🔴			🔴
Changing the type of tasks	🟡			🟡
Changing the number of tasks	🟡		🟡	
Changing the approach	🟡	🟡	🟡	
Moving the task area	🟡			🟡
Expand the task role	🟡			
Changing the quality of the working relationship				🟡
Changing the quantity of the working relationship				🟡
Changing the frequency of interaction				🟡
Changing the persona of interaction			🟡	
Changing the art of interaction			🟡	🟡
Consideration of work as integrated single entity	🟢	🟢	🟢	
Consideration of work as individual parts	🟢	🟢	🟢	
Changing the personal perspective			🟡	
Increase in social resources		🟢		
Increase in structural resources	🟢		🟢	🟢

Figure 3: Influence of IT components in matrix representation.

Key: R=recommendation, C=coaching, TM=time mgmt., CM=complaint mgmt.

3.5 Perspectives and Limitations

Implementing job crafting programs requires highly qualified workplace and health specialists (Kehr et al., 2014), which is why JCIS are not widespread in practice. For this reason, there are currently only a small number of prototypes or systems, as development requires highly qualified specialists from several disciplines.

The use of job crafting methods in general, and thus also the use of supporting IT systems, is limited by the organizational, personal, and technological factors shown in Figure 2. In particular, relationship crafting as a subcategory of job crafting could become a challenge for IT systems, as it is mainly supported by the complaint management system in the method matrix (Figure 3) and less by several IT components at the same time.

In general, besides the multitude of positive consequences, it should be noted that job crafting can also have negative consequences. These include, for example, additional stress (Berg et al., 2008), which can be triggered if the application of JCIS is perceived as a constraint or even as overwhelming. The use of such programs should therefore be voluntary. Negative consequences may include intentions to switch jobs due to dissatisfaction with the new system and increased workload, even burnout (Zhang & Parker, 2019).

On the other hand, job crafting can positively influence work engagement, job satisfaction, and job performance (Tims & Bakker, 2010). The meaningfulness of work, identification with work, and individual well-being can be strengthened (Peng, 2018; Tims & Bakker, 2010). Furthermore, there is evidence that job crafting is positively related to person-job fit (Niessen et al., 2016) and can impact creativity, personal growth and the development of personal competences. Therefore, the goal should be to promote the many positive effects of job crafting and avoid negative effects (Berg et al., 2008). This should be taken into account when developing suitable IT systems.

4 CONCLUSION

So far, only a few approaches offer IT support for job crafting, despite the term of JCIS has been coined almost a decade ago. The research field focuses primarily on the description of job crafting behavior and the underlying personality and environmental factors that promote such behavior. In doing so, the theory was further developed from the distinction between task crafting, relationship crafting, and cognition crafting (Wrzesniewski & Dutton, 2001) and the demand resource approach (Tims & Bakker, 2010) into a synthetic model that also includes the categories of avoidance and approach (Zhang & Parker, 2019).

The focus of IT support is currently mainly on the aspect of gamification. In addition, other supporting IT components such as recommender systems, time recording systems, or complaint management systems can be implicitly derived. Still, concrete implementations or prototypes are missing in the literature.

Furthermore, it is conceivable that components that cannot be derived from the literature, such as knowledge management systems, are also suitable for IT support of job crafting. Moreover, it seems possible that there are implementations of job crafting that are on the market but not discussed in the scientific literature. Knowledge about such components and systems could close knowledge gaps about the value proposition of JCIS and provide further approaches to how a JCIS should be designed.

Based on the findings, an integrative model was developed, which follows the approach that the different job crafting behaviors should not be arranged in a hierarchical order but complement each other. A job crafting behavior can belong to several categories at the same time. The resulting model is an initial proposal that may be expanded and discussed.

All in all, job crafting offers enormous potential to make working life easier for employees and, by extension, for employers and the entire organization. The promotion of job crafting in the company, if implemented correctly, offers a suitable approach to reduce the stress of employees and, indirectly, to increase the company's profit in the long run.

However, further research seems necessary to identify the value contribution of such systems. This also includes the development of prototypes and the required tests. The main barriers to development mentioned are the high development costs due to the high demand for specialists. Furthermore, although awareness of the social and economic benefits of sound occupational health management seems to be growing, it is still low at the societal and organizational level.

REFERENCES

Batova, T. (2018). Work Motivation in the Rhetoric of Component Content Management. *Journal of Business and Technical Communication*, *32*(3), 308–346. https://doi.org/10.1177/1050651918762030

Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2008). What is job crafting and why does it matter. *Purpose and Meaning in the Workplace*.

Berg, J. M., Dutton, J. E., & Wrzesniewski, A. (2013). Job crafting and meaningful work. In B. Dik, Z. S. Byrne, & M. F. Steger (Eds.), *Purpose and meaning in the workplace* (pp. 81–104). American Psychological Association. https://doi.org/10.1037/14183-005

Blazejewski, S., & Walker, E.-M. (2018). Digitalization in Retail Work: Coping With Stress Through Job Crafting. *management revu*, *29*(1), 79–100. https://doi.org/10.5771/0935-9915-2018-1-79

Bruning, P. F., & Campion, M. A. (2018). A Role–resource Approach–avoidance Model of Job Crafting: A Multimethod Integration and Extension of Job Crafting Theory. *Academy of Management Journal*, *61*(2), 499–522. https://doi.org/10.5465/amj.2015.0604

Elliot, A. J. (2006). The Hierarchical Model of Approach-Avoidance Motivation. *Motivation and Emotion*, *30*(2), 111–116. https://doi.org/10.1007/s11031-006-9028-7

Gennaro, D. de, Adinolfi, P., Piscopo, G., & Cavazza, M. (2022). Work Digitalization and Job Crafting: The Role of Attitudes Toward Technology. In (pp. 59–72). Springer, Cham. https://doi.org/10.1007/978-3-030-86858-1_4

Jent, S., & Janneck, M. (2016). Using Gamification to Enhance User Motivation in an Online-coaching Application for Flexible Workers. In *Volume 2: WEBIST 2016* (pp. 35–41). https://doi.org/10.5220/0005898400350041

Kehr, F., Bauer, G., Jenny, G., Güntert, S. T., & Kowatsch, T. (2013). Towards a Design Model for Job Crafting Information Systems Promoting Individual Health, Productivity and Organizational Performance.

Kehr, F., Baür, G., Jenny, G., & Güntert, S. (2014). Enhancing Health and Productivity at Work: towards an Evaluation Model for Job Crafting Information Systems. *ECIS 2014 Proceedings*.

Lee, J., Lee, H., & Suh, A. (2018). Information Technology and Crafting of Job: Shaping Future of Work? *PACIS 2018 Proceedings*, 275.

Li, M. M., Peters, C., Poser, M., Eilers, K., & Elshan, E. (2022). ICT-enabled job crafting: How Business Unit Developers use Low-code Development Platforms to craft jobs. *ICIS 2022 Proceedings*, 16.

Mansour, S., & Nogues, S. (2022). Advantages of and Barriers to Crafting New Technology in Healthcare Organizations: A Qualitative Study in the COVID-19 Context. *International Journal of Environmental Research and Public Health*, *19*(16). https://doi.org/10.3390/ijerph19169951

Niessen, C., Weseler, D., & Kostova, P. (2016). When and why do individuals craft their jobs? The role of individual motivation and work characteristics for job crafting. *Human Relations*, *69*(6), 1287–1313. https://doi.org/10.1177/0018726715610642

Parker, S. K., Bindl, U. K., & Strauss, K. (2010). Making Things Happen: A Model of Proactive Motivation. *Journal of Management*, *36*(4), 827–856. https://doi.org/10.1177/0149206310363732

Peng, C. (2018). A Literature Review of Job Crafting and Its Related Researches. *Journal of Human Resource and Sustainability Studies*, *06*(01), 1–7. https://doi.org/10.4236/jhrss.2018.61022

Tarafdar, M., & Saunders, C. (2022). Remote, Mobile, and Blue-Collar: ICT-Enabled Job Crafting to Elevate Occupational Well-Being. *Journal of the Association for Information Systems*, *23*(3), 707–749. https://doi.org/10.17705/1jais.00738

Tims, M., & Bakker, A. B. (2010). Job crafting: Towards a new model of individual job redesign. *SA Journal of Industrial Psychology*, *36*(2), 1–9.

Verelst, L., Cooman, R. de, Verbruggen, M., Laar, C., & Meeussen, L. (2021). The development and validation of an electronic job crafting intervention: Testing the links with job crafting and person-job fit. *Journal of Occupational and Organizational Psychology*, *94*(2), 338–373. https://doi.org/10.1111/joop.12351

Wang, W [Weian], Iyer, L., & Panigrahi, P. (2018). The Impact of BYOD Use on Employees' Proactive Behaviors: A Job Crafting Perspective. *AMCIS 2018 Proceedings*.

Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a Job: Revisioning Employees as Active Crafters of Their Work. *Academy of Management Review*, *26*(2), 179–201. https://doi.org/10.5465/amr.2001.4378011

Xu, M., Ou, C. X., & Wang, W [Wei] (2018). Information technology-enabled collaborative job crafting in self-leading team. *PACIS 2018 Proceedings*, 72.

Xu, M., Wang, W [Wei], Ou, C. X., & Song, B. (2023). Does IT matter for work meaningfulness? Exploring the mediating role of job crafting. *Information Technology & People*, *36*(1), 313–331. https://doi.org/10.1108/ITP-08-2020-0563

Zhang, F., & Parker, S. K. (2019). Reorienting job crafting research: A hierarchical structure of job crafting concepts and integrative review. *Journal of Organizational Behavior*, *40*(2), 126–146. https://doi.org/10.1002/job.2332

Zhou, L., Chen, Z., Li, J., Zhang, X., & Tian, F. (2021). The influence of electronic human resource management on employee's proactive behavior: based on the job crafting perspective. *Journal of Management & Organization*, 1–18. https://doi.org/10.1017/jmo.2021.33