

SATISFACTION IN CONCEPTS OF THE ORGANISATION'S INTANGIBLE ASSETS – AND THE PROCESSES OF PRODUCTION PREPARATION*

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Abstract: This article addresses the issue of employees' job satisfaction in terms of the intangible assets of an organisation and simultaneously indicates the role which both of those aspects play in implementing the production preparation process. Through the use of a systematic literature review method, it was possible to identify research studies devoted to the position of satisfaction in the concepts of intangible assets and intellectual capital, and the study results in terms of relations between various intangible assets, such as the company's reputation or structural capital, and job satisfaction. The conclusions of this study are particularly important for production preparation. They indicate how important the reputation of the company and other intangible assets are for employees' satisfaction and for retaining them in the company, which is crucial for the implementation of technologically advanced research and development.

Keywords: job satisfaction, intangible assets, processes of production preparation.

1. Introduction

The value of an organisation and its ability to build strategic advantage depends on the amount and quality of the tangible and intangible assets at the disposal of this organisation as well as on the administration of the unique configuration of the assets within the system that any organisation constitutes [Kunasz 2016, pp. 38-39; Matejun, Motyka 2016, p. 37]. Effective administration requires more than just the skillful use of information on the functioning of particular

subsystems of a given organisation – at least for this reason – that the intangible assets¹ determine the development of the organisation primarily when they are appropriately combined with the tangible assets and a given organisation management model adopts a holistic form [Skowron 2013, p. 158; Bombiak 2015, p. 75].

Intangible assets are presumed to be [Czerniachowicz 2016, p. 374; Bombiak 2015, pp. 74-75] ideally liquid and original in comparison to tangible assets in the sense that they can be transformed into any

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¹ With regard to which, since the 1980s the source literature has increasingly highlighted their value and meaning for the development of the organisation.

tangible asset. Moreover, it is demonstrated that tangible and intangible assets empower and enrich one another. Their multiple and simultaneous use is also possible [ibid]. It is stressed that these assets are more “unstable” than the tangible assets, and that they are characterised by long-term accumulation (they slowly gain value when they are properly managed). Taking into account their nature (it is stressed that they are unique, difficult to identify² and imitate i.e. to replicate), within their scope, the business entities remain diversified to a much greater degree than in the case of tangible assets. In that regard, as well as due to the intellectual capital leverage effect³, increasingly often described in the source literature, intangible assets are considered to be an important factor in terms of creating a competitive edge for business entities⁴.

The issues raised above relating to intangible assets are particularly important for the process of production preparation. Modern organisations are functioning in conditions of high uncertainty, notably production companies are forced to develop constantly. The scope and dynamics of the transformations of the modern environment and the trends and megatrends in consumer behaviour that reflect the social transformations cause those companies to continuously make efforts to maximise outcomes as fast as possible. Their aim is not only to increase the production output and lower its costs, but also to improve the quality and technological advancement of products. In this area, the process of production preparation plays a significant role. This process includes [Szatkowski 2014, p. 38]: constructive production preparation, technological production preparation, and organisational production preparation. Within the scope of this study, attention will be given only to the first stage of this process⁵. The complexity of the tasks fulfilled within the scope of this pro-

cess, results, on the one hand, in a rise in companies’ demand for highly qualified staff⁶ and, on the other hand, in the increasing implementation of collaborative forms of work organisation in measures undertaken in those organisations.

Because of the currently observed trend (therefore, the transformation of the employer’s market to the employee’s market is approaching), the increased movement of labour becomes a significant risk for the organisation. The trend is conditioned not only by the non-rhythmicity of the organisation’s demand for the particular contribution of employees (in terms of the kind of the contribution as well as in terms of the way and the period of its use) – but also by the fact that professionals consciously decide to work in a given place only temporarily (e.g. “for some time” which is beneficial in terms of the development of their professional career). The phenomenon – at some point adopted by both parties (the employee and the organisation) – of this “temporality” of employment⁷, weakens employees’ loyalty towards the organisation and decreases the level of social integration between employees. This means that the employees are to a lesser extent willing to consciously undertake the effort related to spending their cognitive energy for the benefit of the organisation and more often they evince “a lack of social attention” in their professional relationships. The lower level of loyalty and integration also leads to a decrease of trust level in professional relationships, and thus it limits their ability to communicate openly and negatively influences the transfer of knowledge.

By definition, job satisfaction is a good (or positive) emotional state, resulting from self-assessment or the experiences related to one’s job [Leite et al. 2014, p. 480; Jegadeesan 2007, pp. 54-55; Lund 2003, p. 222]. In the source literature, the emphasis is on the

² The set of areas included in the scope of intangible assets is hard to identify unambiguously.

³ Intellectual capital has the ability to increase the profitability of the company by creating new products, services and economic processes [Rzempala, Rzempala 2014, p. 693].

⁴ Intangible assets alone as well as tangible assets are a part of the support the organisation may offer its employee.

⁵ Constructive production preparation consists in designing the construction of a new product along with the rules of proper exploitation. It is divided into two types: perspective and relevant. The first type of the constructive production preparation – perspective – aims at limiting the risk related to launching a product for which there will not be a high demand or a product which is technologically outdated. It is also important to analyse the company manufacturing base in terms of producing a new product, carrying out scientific and research studies, marketing and patent research. The last stage is creating the concept of the new product [Szatkowski 2008, p. 66]. On the other hand, constructive production preparation includes structural and experimental works, e.g. developing the technical and economic premises, and preparing the technical design (draft version), producing and testing the prototype, and the constructive preparation of the trial round, production control and constructive service of the current production [Szatkowski 2014, p. 38].

⁶ A great deal depends on their qualifications, knowledge, competence, experience, predispositions, motivation and involvement.

⁷ This phenomenon was described by Sikorski [2000, pp. 165-167]. He postulated an end of the paradigm of exclusivity and stability of the individual’s involvement in the organisation and a need to consider the organisation as a system of internally diverse and unsustainable relations (agreements) between autonomous individuals (participants of a given organisation), who are seeking the maximisation of personal interests within the limits of the social game they play with each other.

existence of the relations between the job satisfaction level and the commitment to the organisation⁸, and the intensity of the manifestation of the organisational citizenship behaviors (OCBs)⁹ [Jung, Yoon 2015, pp. 1136, 1145; Edmans 2012, pp. 1-2; Bańka 2000, p. 331; Egan et al. 2004, p. 283]. The lack of job satisfaction is connected to the difficulties in accepting the values and aims of the organisation, the reduction of employees' willingness to expend energy for the benefit of this organisation (by reducing the involvement in performed work) and lowering the loyalty level of employees towards the parent organisation [Fulmer et al. 2003, pp. 967, 987-988]. This makes it difficult to directly demonstrate the economic benefits determined by the high level of the employees' job satisfaction¹⁰, but it is possible to demonstrate that the costs of the lack of job satisfaction, from the point of view of the organisation, turns out to be crucial [Tokareva, Tokarev 2017, pp. 233-234; Gheysar et al. 2012, pp. 699-672].

In light of the issues outlined above, it was indicated that an analysis of the relationship between job satisfaction and intangible assets in terms of implementing the production preparation processes should be conducted. The research on the issue mentioned above, was conducted using the method of asystematic review of the literature.

2. Test method

In the procedure of the systematic review of the source literature, after defining the aim of research, it is necessary [Czakon 2015, p. 124] to define the database of the publications that will be studied and afterwards conduct an analysis of the database of the selected publications and, based on the results, compile a report. Defining the database of the publications (which will be studied) consists of the intentional selection of source literature for further analysis from among the set of publications available in the databases¹¹ included in the analysis, based on

the justified criteria. For the purposes of this study, three databases were taken into consideration: *Google Scholar* and *SCOPUS* – and the intended (elementary) revision within its scope was complemented with analogical analysis within the *Web of Science* database. Taken into account were only those publications¹² which included a compilation of the terms: *intangible resources* and *job satisfaction*¹³. From the Google Scholar database, from 3150 research studies which complied with the criteria, 315 publications qualified for the databases intended for the analysis¹⁴. From the *SCOPUS* database, from the 21 research studies which complied with the basic criteria, after revising abstracts for the publications' database intended for the analysis, 8 publications qualified, while from the Web of Science database, from the basic set of publications (19 items), 12 qualified for the analysis. In terms of the last two databases, three publications were found in both of them. It should be emphasised that the vast majority of the publications which included both designated categories (i.e. "job satisfaction" and "intangible resources") are dated after 2012¹⁵.

Analysis of the selected database of publications was conducted in terms of the connections between the analysed categories (i.e. intangible assets and job satisfaction) and in the context of this analysis, forming conclusions regarding the role of those categories in terms of the realisation of the processes of production preparation in the company.

3. Analysis results

The conducted revision of the literature allowed to select the two fundamental approaches in analysing and inference in terms of the raised issue (i.e. considering the issue of the intangible assets as well as of job satisfaction). The majority of publications are devoted to defining the position of satisfaction in the human capital¹⁶. It is also possible to indicate a second, large group of publications in which the pressure was put on defining (but also evaluating)

⁸ I.e. a desire to continue work within its scope (the willingness to stay in the organisation).

⁹ I.e. the evolution of the pro-social attitudes which are significant in terms of the organisation's trouble-free functioning.

¹⁰ According to studies conducted by the Institute of Work Psychology at the University of Sheffield, the differences between companies in terms of profitability and efficiency may be explained by the 5% job satisfaction in the first case and the 16% in the second case [Armstrong 2001, p. 72].

¹¹ Generally, full-text databases.

¹² The revision of the electronic databases was conducted in November/December 2018.

¹³ An attempt was made to select the publication base, taking into account the category of "intangible resources" and "production preparation process – but the lack of publications meeting the search criteria in this area made the systematic review of the literature impossible.

¹⁴ Only full-text, peer-reviewed scientific articles after revising the titles and abstracts for these publications.

¹⁵ In that year the first publications were dated in the WoS and Scopus databases.

¹⁶ Which constitutes an important part of intangible assets.

the connections between some of the categories of intangible assets (such as human capital or reputation) and job satisfaction.

In the process of analysing the contents of publications from the first group (where the employees' job satisfaction is considered in terms of the intangible asset), attention should be drawn to the studies devoted to the balanced scorecard which refers not only to the capabilities and productivity of the employees, but also to their job satisfaction and rotation [Carson et al. 2004, p. 448]. It should be also noted that some of the studies assume that the involvement in the achievement of the organisation's purposes may be considered in terms of the sense of belonging and job satisfaction in the surveys which are used to evaluate the human capital of the organisation [Verbano, Crema 2013, p. 545]. In other studies, it is demonstrated that the evaluation of employees' job satisfaction may be also considered as a part of the intellectual capital report [Mourtsen et al. 2005, pp. 78-80]. According to E.M. Alama [Martín-de-Castro et al. 2004, pp. 655-656] it is an element of the professional development of an employee that is one of the elements of the human capital. Similarly, in the study conducted by H. McGuirk, H. Lenihan and M. Hart [2015, p. 969], job satisfaction was considered a part of Innovative Human Capital (IHC), which positively influences the level of the innovativeness of the company.

In terms of the second indicated group of publications, as mentioned in the analysis, studies focus on the empirical relationships between the human capital, or other intangible assets, and the employee's job satisfaction. In the studies conducted by M. Mura and M. Longo [2013, p. 445], the relationship between *structural capital* (which consists of integration, contributing to the wealth of the company, trust, communication), and *individual performance*, which consists of involvement, satisfaction and the low tendency to change jobs was confirmed. It is also worth considering the premise claiming that other important intangible assets in one's job (which was also demonstrated in one of the studies) may be autonomy at work and a job that challenges the employee, which positively influence job satisfaction [Bontis et al. 2011, p. 246]. The practices of human resources management¹⁷ such as human resources planning, recruitment and nominating to a position, rewards and motivation, and training programmes, also have a documented positive influence on the employees' motivation

[Al-Hawari, Shdefat 2016, p. 284]. The positive influence of reputation on the employees' job satisfaction was also confirmed in the studies [Alniacik et al. 2011, p. 1184; Barakat, Isabella, Boaventura, Mazzon 2016, p. 2333; Helm 2011, p. 661; Kamasak 2010, p. 217]. However, in the study conducted by N. Bontis and A. Serenko [2009, p. 283], the influence of satisfaction on the human capital, employee's involvement and motivation was identified.

Referring to the issue of explaining the relations between the intangible assets of an organisation and job satisfaction, it is worth addressing the theory of social exchange. According to this theory, the organisational setting consists of a kind of a favour exchange in which the manager or leader offers tangible assets in the form of salary or other benefits, for example, company car or intangible assets, such as professional training, emotional support, assigning attractive targets in the organisation, and the employee offers involvement and effort in return. On the basis of the social exchange theory, it is being considered how the perceived support offered by organisation, i.e. to what extent the employee sees the allocation of assets as beneficial and fair, influences how the employee identifies with the organisation [Sluss et al. 2008, p. 458]. It has also been demonstrated that there is a statistically significant relationship between the perceived support offered by the organisation and job satisfaction [Melián-González 2016, p. 50].

Among the various intangible assets of the organisation [Pietruszka-Ortyl 2008, p. 64], one can distinguish those assets which are particularly connected to the production preparation process, i.e. the employees' knowledge, capabilities and attitudes. In particular, attention is drawn to: employees' loyalty (resulting from satisfaction), their creativity and innovativeness, the organisation's knowledge¹⁸ – and – the effects of creative activity (which may be used due to the licence agreements, e.g. middleware or inventions, which are constructional and technological designs developed by other people). Another important factor is the access to specialised databases and information resources, organisational culture is also a particularly important resource. The values, norms and beliefs shared by employees influence peoples' work in the organisation (in this case, the work of design engineers and technologists who are working on new product design and its manner of production). This is also the case with the organisation's strategy, which includes goals related

¹⁷ I.e. what builds human capital.

¹⁸ The knowledge about products, technique and technology, market or "know-how". The knowledge of the organisation may be codified in designs and nested in the production preparation processes.

to development determining the manner, direction and scope of operations in terms of production preparation. Analogically, attention is drawn also to organisational structure (for example, matrix structure where designers, engineers and technicians are assigned to work on designs of various products) and company management systems (similarly to quality management system or knowledge management system). The relationships with individuals which support research and development by sharing the expertise, are also considered to be an important factor in the process of production preparation.

4. Conclusions

Analysing the chosen studies, it is possible to attempt to define a group of intangible assets which are particularly important for the realisation of production preparation processes. Employees' knowledge, capabilities and attitudes are evaluated as part of a competences assessment. The positions of the chief design engineer and the chief technologist play a crucial role in the production preparation processes. The studies conducted by K. Szatkowski [2008, p. 211] on the general and position competencies of the chief design engineer show that they should have: concentration skills to perform tasks and monitoring skills on satisfactory level, creativity and communication skills, and organisational capacities on a very good level, however, skills such as problem solving, analytic thinking, stress management, and attitudes such as the need for constant development and good performance should be on an excellent level. Professional competencies include, among others, knowledge about: modern management methods, virtual and fast prototyping, concurrent engineering, CAM/CAE/PDM software, production process and selected issues of management, for example, change management and time management [Szatkowski 2008, p. 211].

It is hardly possible to name all the knowledge resources which the company realising production preparation process should have. Nevertheless, the analysis of the literature sources concerning the production preparation allows to demonstrate examples of the knowledge resources which are particularly important in the production preparation. Notably, an important factor is the need to consider the knowledge of the market situation for the designed products and technical and technological progress [Brzeziński 2013, p. 24]. At every stage of the process of designing a new product, the knowledge resources developed in the previous stages or were obtained in a different manner are required. These include:

budgets and schedules, product concepts, technical and economic guidelines, principles of construction and technology design, tests and study results, technology of creating prototypes, construction and technological documentation, management methods, methodology of designing production processes [Durlik, Santarek 2016, pp. 124, 133, 140], specialist literature, standards, for example, ISO [Karpiński 2013, p. 22]. Computer programmes which support product design (*Computer Aided Design*, CAD) are becoming more common. They allow to create many variants of one product without the need of repeating time-consuming calculations and making drawings [Liwowski, Kozłowski 2006, p. 62]. Computer programmes which support the production process include: AutoCAD, SolidEdge, SolidWorks, CATIA, Intergraph. Other computer systems, such as: CAE – Computer Aided Engineering, PDM – Product Data Management, CAM – Computer Aided Manufacturing, CIM – Computer Integrated Manufacturing also play an important role. Computer system integration allows to perform many complex functions, such as: automatic calculations and collecting data, searching for materials, parts, documentation, norms and patents, creating various drawings, devising technical specification for parts and economic calculations, developing technologies, supporting decision-making process [Kubiński 2017, pp. 376-377, 384].

Currently, the sequential production preparation process which consists in the functional division into the individual stages of the production preparation process, is being withdrawn in favour of an integrated approach, which consists in combining manufacturing and technological matters in one project. Therefore, a development team has an interdisciplinary character. Specialists in various fields who work in a development team, share their knowledge resources and communication system. Focusing on the common purpose and team assessment of the devised solutions have become particularly important [Pasternak 2005, pp. 216-217]. Changes which occurred in the attitude towards design, contribute to the introduction of modifications in the organisational culture. Referring to the typology of organisational cultures by K.S. Cameron and R.E. Quinn [2003, pp. 40-41] it is possible to compare them to the differences between the hierarchy culture and the clan culture or between the hierarchy culture and the adhocracy culture. Changes in the design process are not the only thing that leads to modifications in the organisation culture units which are dealing with production preparation. More often, the organisational culture in which design engineers are working decides on the culture in which the project is being implemented. According to

W. Gierulski and M. Wirkus [2017, p. 462]: “it comprises a certain characteristic style, character and nature of actions as well as the atmosphere that accompanies those actions. It may be partially forced by the officially adopted system of values and standards related to work processes, means of communication and applied management practices”. The project implementing culture of the product preparation is a more valuable resource, if it follows the principles regarding, for example, the management style. This rules include, among others, creating and promoting a vision, trust-building, creating a good working environment [Gierulski, Wirkus 2017, p. 463].

A company’s production strategy is considered to be an intangible asset required for the proper production preparation. The planned number and type of produced items, along with technical documentation, constitute input in designing technological processes [Pająk et al. 2014, p. 97], therefore, the company needs a strategy which will define them. Thus, it should be compatible with the company strategy and, in particular, with the production strategy which “defines the goals of manufacturing activity in terms of the general strategy of the company” [Santarek et al. 2017, p. 25]. Another significant type of a strategy which is directly connected to the production preparation is the company technological strategy. According to M. Dogson [Knosala, Moczala 2017, p. 327], technological strategy is an “inter-company understanding – appearing among the senior management and a dissemination in the entire organisation – the importance and potential of technology, due to its competitive interaction on how this potential may be used in the future and in what manner it complements the other elements of the strategy, such as finances, marketing and staff”. Knowledge management strategy is also crucial. Thus the company management body accepts a certain approach to the key knowledge resources [Mikula 2006, pp. 143-144].

The organisational structure is an important intangible asset in the production preparation. On different stages and in various organisational and technical conditions for implementing research and development works, the following types of organisational structures are being used [Szatkowski 2008, pp. 205-208]:

1. Line structure – may be used for similar tasks which are implemented before launching a new product.

2. Project structure – also used for tasks related to starting production of a new product.

3. Team structure is constituted in situations important for the entire production process or in crisis situations.

4. Functional structure (many teams, one coordination centre) is used at the stage of applied research and development works (basically, it corresponds to the constructive and technological production preparation).

5. Matrix structure combines the potential of line and functional structure, therefore, it can be used in works related to starting the production process as well as in the early stages of production preparation.

Company functional systems are very important in the production preparation process. They include: knowledge management system which allows localising and acquiring knowledge regarding technological processes which the new product should be subjected to [Paszek 2011, p. 41], information system, material supply system [Wójcik 2015, pp. 730,731], benefits for employees who are realising various stages of works on the new product [Bijańska et al. 2016, p. 130] or total quality management system [Pałucha 2008, p. 72].

In the production preparation process in the company, relationships with other companies and research and development units play a significant role. One of the contemporary approaches to designing new products is creating collaboration platforms which allow to use diverse design tools [Knosala, Moczala 2017, pp. 367-368].

The literature review proved that satisfaction not only constitutes a part of intellectual capital but also that it is a category dependent on this capital. It is also possible to indicate key factors of employees’ satisfaction, such as: autonomy at work, the structural capital of the organisation, reputation or the support offered by the organisation. It is clear from the above analysis that there are a few factors particularly important for the implementation of the production preparation processes. One of them is the fact that, apart from intangible assets which are usually associated with production preparation (for example, intellectual property rights and industrial property rights or the knowledge and experience of the company), the reputation of the company is a matter of great importance in this scope (area). The significance of the relationship between the reputation of the company and job satisfaction is confirmed by a number of research studies. Therefore, the brand and reputation of the company are also very important intangible assets owned by the organisation, required for production preparation process implementation, because they ensure the high level of job satisfaction among engineers and designers. This is important because it is easier to make an employee stay in the company when they have a high level of job satisfaction, which is essential in terms of retaining

competitive advantage. The second important factor is that the variety and richness of tangible assets and intangible assets in the organisation (particularly in a company in which management intends to design and produce new products) are of vital importance. They are the subject of the exchange between the organisation and the employee and they contribute to increasing job satisfaction and involvement, which are necessary in design works which require effort, and the proper use of knowledge acquired by the employees and creativity. Last but not least, one very important issue should be mentioned, i.e. the subjective perception of the value of the resources which the employee receives from the organisation and to what extent the allocation of resources among employees is just. This may be extremely important among engineers, designers and researchers who subjectively perceive the support they are offered, which impacts on their job satisfaction level. However, the allocation of resources which is considered unjust may be a cause of conflicts among employees.

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SATYSFAKCJA W KONCEPCJACH ZASOBÓW NIEMATERIALNYCH ORGANIZACJI A PROCESY PRZYGOTOWANIA PRODUKCJI

Streszczenie: Artykuł porusza zagadnienie satysfakcji pracowników w odniesieniu do zasobów niematerialnych organizacji z jednoczesnym wskazaniem roli, jaką ogrywają obie te kwestie w procesie przygotowania produkcji. Dzięki wykorzystaniu metody systematycznego przeglądu literatury zidentyfikowano prace naukowe poświęcone miejscu satysfakcji w koncepcjach zasobów niematerialnych i kapitału intelektualnego oraz prezentujące wyniki badań w zakresie związków między różnymi zasobami niematerialnymi, takimi jak reputacja firmy czy kapitał strukturalny, a satysfakcją z pracy. Wnioski z tych badań mają szczególne znaczenie dla przygotowania produkcji. Wskazują bowiem, jak ważne są reputacja firmy i inne zasoby niematerialne wykorzystywane do zagwarantowania satysfakcji pracowników i ich zatrzymania w firmie, co ma szczególne znaczenie w realizacji zaawansowanych technologicznie prac badawczo-rozwojowych.

Słowa kluczowe: zadowolenie z pracy, wartości niematerialne, procesy przygotowania produkcji.