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## HUMAN VALUES, TEAMWORK DESIGN AND KNOWLEDGE MANAGEMENT ON THE SHOP FLOOR: A SYSTEMATIC LITERATURE REVIEW

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### ABSTRACT

The purpose of this paper is to identify the relationships between teamwork design, knowledge management and human values, categorizing the studies focused in the interplay of these three variables, with a focus on their appliance to industrial shop floor level context. By doing so, this paper seeks to identify literature gaps to be explored in subsequent researches. The research method adopted was a systematic literature review from databases related to the teamwork design, knowledge management and human values published in periodicals within the period comprehended between 2000 to 2015. Thirty-five open categories were initially identified in the interplay of the three variables, with the clear majority of them emphasizing the relationship between two of the three variables. Lately, these original categories converged to nine axial categories or different areas of research. As a main finding of the study, it was possible to identify one main gap in the literature, suggesting the development of new researches focused on investigating how teams'



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design and levels of autonomy impact the performance of team members' knowledge management activities in different groups on which different values prevail.

**Keywords:** Human values, Consciousness Levels; Teamwork Design; Autonomy; Knowledge Management; Shop Floor; Systematic Literature Review.

## 1. INTRODUCTION

Knowledge is defined as the capacity to take action in uncertain situations. Knowledge management is a recent concept discussed more fully from the 1990s and on, defined as a process of promoting the flow of knowledge between individuals and groups within the organization (ALAVI; LEIDNER, 2001).

Work teams are one of the most popular type of teams. Cohen and Bailey (1997) make a distinction between "regular" work teams, which are directed by a supervisor who make the most of the decisions and a self-managing or autonomous work team, which involves employees in making decisions.

According to Schuring (1996), Sacomano Neto; Escrivão Filho (2000), Marx (2010) and many others, team members' autonomy is one of the main drivers of successful knowledge management activities on the shop floor level. In contrast, some qualitative studies, such as one conducted by Wzorek and Cordeiro (2014), propose that autonomy alone cannot be associated with more effective knowledge management activities on the shop floor.

According to Cordeiro et al. (2012), Cowan and Todorovic (2000), Bell (2007) and others, the role played by a greater level of team members' autonomy in the causation of a better team performance is closely dependent on the values of the team members.

This paper seeks to identify the relationships between Knowledge Management, Teamwork Design and Human Values (or Levels of Consciousness), with a focus on the interplay of these three variables at the industrial shop floor level. To accomplish this purpose, a systematic literature review was conducted, aiming to identify how the current literature relates each one of these three variables to the others. More specifically, the article seeks to identify: i) how human values affect teams and their performance regarding knowledge management; ii) how knowledge

management and sharing affect teams performance and iii) how team's design affect knowledge management and sharing.

Section two presents the Theoretical Framework that helped developed the protocol that guided the research on periodicals' databases. It is divided into three subsections, each one focusing on one of the research variables mentioned: i) Knowledge management on the shop floor; ii) Teamworking Design and iii) Human Values and Consciousness Levels. Section three presents the Research Design, which involves the collection, categorization and the analysis of the data used in this research.

This section also provides an explanation on how the authors defined and performed the research protocol. All the categorized subjects and related authors are found in the section four, in which research's main findings are also presented. Finally, section five presents final conclusions and proposals for future researches.

## **2. THEORETICAL FRAMEWORK**

This section presents a theoretical review on the three main variables approached by the present study.

### **2.1. Knowledge Management on the Shop Floor**

Knowledge Management (KM) is a process of promoting the flow of knowledge between individuals and groups within the organization, consisting of four essential steps: acquisition, storage, distribution, and knowledge utilization (ALAVI; LEIDNER, 2001).

When individuals provide any part of their knowledge to others, they are involved in knowledge sharing (BARTOL; SRIVASTAVA, 2002). Knowledge sharing represents a social activity that occurs within a system where knowledge represents a resource that has a value (DAVENPORT; PRUSAK, 1998; ROLFSEN, 2013).

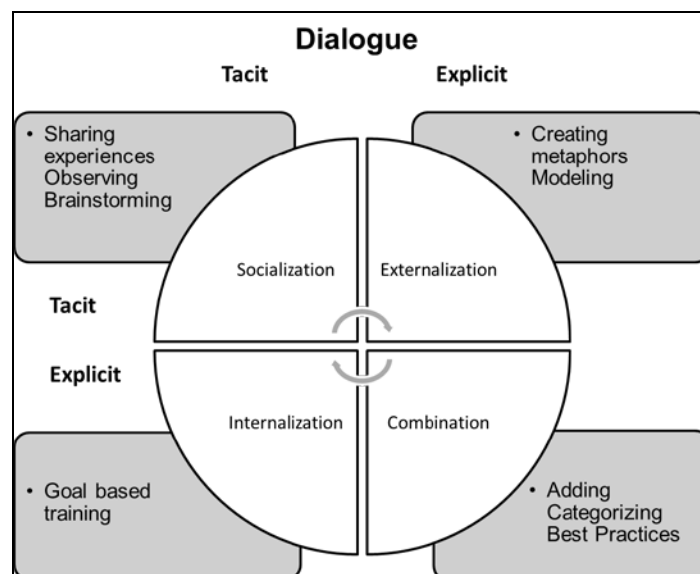
Despite being under debate as an area of research and publishing within the Social Sciences since the early 1990s, the integration of Knowledge Management with Production Organization concepts is still quite recent (CORDEIRO et al., 2012). Muniz (2011) defines these concepts as a process that seeks the integration of tacit and explicit knowledge between human beings, during their jobs, looking for improvements in order to promote enhancements of the organizational performance

on the shop floor of industrial companies. Knowledge management strategies, practices and applications are considered to have positive effects on the improvement of organizational performance (TSENG, 2014; YANG, 2010; GOMES; BARBOSA, 2014).

There is a difference between tacit and explicit knowledge and together they represent the “epistemological” dimension to organizational knowledge creation. This dimension involves a continual exchange between the two types of knowledge, which guides the creation of new ideas and concepts. These interactions define a further dimension to organizational knowledge creation, which is associated with the extent of social interaction between individuals that share and develop knowledge. This is referred to as knowledge creation’s “ontological” dimension (NONAKA, 1994).

The key factor to this process is the involvement of a wide range of employees, which creates a greater number of innovations and also more diverse innovations than if merely a few specialized employees were involved (MUNIZ et, al. 2011; TIDD; BESSANT, 2005; FAY et, al. 2015; HAGHIGHI, et, al. 2015).

According to Nonaka and Takeuchi (1997), knowledge creation focus on building both, tacit and explicit knowledge and more also, on the interchange between these two aspects of knowledge through internalization and externalization. The Figure 1 exemplifies the knowledge spiral process.



**Figure 1: Knowledge Spiral**  
 Source: Nonaka and Takeuchi (1997, adapted).

Motivation is recognized as a main factor in successful knowledge flow in organizations (ARGOTE et al., 2003; YAHYAGIL, 2015). Understanding the factors that motivate workers to engage in knowledge sharing has started to receive considerable attention in recent years (BORDIA et al., 2006).

Sharing of tacit knowledge is facilitated by an engaging environment (NAKANO et al., 2013). An engaging environment is supported by shared language and knowledge, and some values like openness and trust.

Individual and shared values are important factors influencing workers propension to share and create new knowledge. The results-oriented, loosely controlled and job-oriented cultures will improve the effectiveness of the KM process and will also increase employees' satisfaction and willingness to stay with the organization (CHANG; LIN; 2015).

According to Swift et al. (2010), organizations should develop hiring processes that increase the probability of choosing workers with a learning goal orientation, especially in positions that require high levels of knowledge sharing. Fitting an individual's goal orientation with the knowledge sharing needed in a particular position may increase organizational performance.

Teamworking is pointed out as one of the most effective organizational designs regarding the creation of new knowledge, for it favors knowlege sharing between team members.

## **2.2. Team working**

Cohen and Bailey (1999) describe a team as a collection of individuals who are independent in their tasks, share responsibility for outcomes and manage their relationship across organizational boundaries.

Work teams are the most popular type of teamworking. Cohen and Bailey (1999) also point out that work teams normally are managed by a supervisor who make the most of the decisions, deciding how things are done and who does each of these things. In contrast, they also refer to a self-managing or autonomous work team, which involves employees in making decisions.

Regarding the shop floor level, Pruijt (2003) defines the concept of teamworking as a product of two distinct developments:

- A neo-Tayloristic form of work, on which there is a fix supervisor who works as team leader, and only the team leader is able to participate in decision-making; standardization is pursued; there are bonuses based on assessments by supervisors, focusing on how deeply workers cooperate in the system;
- An anti-Tayloristic form of work, on which there is no supervisor and leader position rotates; all team members are able to participate in decision-making; Standardization is not crazy pursued; there is an inclination to alleviate technical discipline; remuneration is based on proven skill level and there are no group bonuses.

Danford (1998) also mentions two models of teamworking: "Japanese Style" vs. "Autonomous teams", the former being similar to Prujit's neo-tayloristic group and the latter resembling Prujit's anti-tayloristic teams. Similarly, Marx (2010) presents two different types of work teams at the shop floor: enriched groups and semiautonomous groups; the enriched groups being equivalent to Prujit's neo-Tayloristic Teams and the semiautonomous groups approximating Prujit's anti-Tayloristic teams.

According to Salerno (1991), Semiautonomous Groups' performance are superior to enriched groups, especially in contexts on which production flexibility is needed due to a higher demand for product and method innovations. Accordingly, Marx (2010) defends that enriched groups have a restricted level of autonomy and assignments, focusing in operational improvements in the working environment. According to the author, these limitations have the potential to reduce the likelihood of enhancing professional skills and more strategic improvements.

As Dankbaar (1997, p. 577) puts, "...the Japanese notion of 'teamwork' refers to a sense of responsibility for the whole enterprise ('Team Toyota'), and to mutual aid and off-line improvement activities. It does not refer to working in teams". Based on this sentence, it can be noticed that Dankbaar's concept of teamworking is equivalent to the formerly presented anti-Taylorist teams and semiautonomous groups. Conversely, Womack et al. (1992) introduced the term "team" to designate Japanese work groups, which were equivalent to the formely presented neo-Tayloristic teams or enriched groups.

One influencing factor for the teams' formation is that people who are part of them have thoughts, personalities and different educational backgrounds, what can hinder the synergy between them. When the synergy happens, the team performs well. Otherwise, there is misunderstanding and problems can be amplified. That suggests that team-members' values play an important role in team effectiveness (SACOMANO NETO; ESCRIVÃO FILHO, 2000; DELARUE et, al. 2008).

Wzorek and Cordeiro (2015) conducted a qualitative research with three auto parts companies in South Brazil, on which they explored in a deeper way the differences between enriched/neo Taylorist and semi-autonomous/anti Tayloristic teams.

Based on Marx (2010), they proposed a continuum between the two extremes of enriched/neo-Tayloristic groups and semiautonomous/anti-Tayloristic Groups. They also provided a table that enables one to assess and classify a work team into six different categories, varying from the most simple and standardizing focused to the most complex and flexibility focused: i) pre enriched groups; ii) enriched groups I; iii) enriched groups II; iv) semiautonomous groups I; v) semiautonomous groups II and vi) semiautonomous groups III. In this same research, it was found that increased autonomy does not guarantee necessarily better results to the company in terms of knowledge creation and management in the shop floor, countering some already mentioned works in the social sciences field.

As mentioned by Chang and Lin (2015) and Nakano et al. (2013), workers' values have major influence on KM effectiveness, and people with different values will react differently to a higher or lower level of autonomy in a work team.

### **2.3. Human Values and Consciousness Levels**

Maslow is one of the first researchers to synthesize a wide variety of studies related to human motivation. Before Maslow, researchers generally focused separately some factors as biology, achievement, or power, to explain what moves, directs, and maintains human behavior.

Huitt (2003) holds that Maslow proposed a hierarchy of human needs based on two groups: deficiency needs and growth needs. Within the deficiency needs, each lower need must be met before moving to the next higher level. Once each of

these needs has been satisfied, if at some future time a deficiency is detected, the individual will act to remove the deficiency.

Maslow's initial concept included only one growth need: self-actualization. According to him, self-actualized people are defined by: being problem-focused, life appreciative, interested on personal growth and focus on having great experiences. Later on, he stated that the more self-actualized and self-transcendent one person gets, he or she will be more able to know what to do in different kind of situations (MASLOW et al., 1998).

Values could be defined as "an individual view on what is most important in life that in turn guides behavior". They are a useful option for intention changes, which relates to individual awareness (HINES, 2011a. p. 188).

Inglehart's (1997) theory of intergenerational value change suggests that one's level of "existential security" is the key factor to self-actualization and happiness. It's not necessarily how much money one has, but how secure one feels. Considering knowledge as having a number of levels of comprehension, these levels (human data) grow from simple to complex, turning out the different attributes of knowledge, providing some manners to measure and to understand individual's values and consciousness (BENNET et al., 2010).

The reasons for acting in particular ways change, as do the behaviors. Spiral Dynamics (SD) is based on Clare Graves' studies on human consciousness and describes biopsychosocial systems in form of an expanding spiral. The term biopsychosocial reflects a focus on a multidisciplinary approach to understand human nature (COWAN; TODOROVIC, 2000).

Therefore, "Bio" stands for the neurology and chemical energy of life; "psycho" is related to the variables of personality and life experiences and "social" focuses on the collective energy in group dynamics and culture, as the interpersonal domain influences human behavior.

Finally, "system" stands for the interdependence and action/reaction of these three upon one another in a coherent whole. All consciousness levels defined by Cowan and Todorovic are detailed in Exhibit 1.



Exhibit 1: What people in each worldview seek out in life

Color	Color	Human Characteristics
1	Beige	Survival; biogenic needs satisfaction; reproduction; satisfy instinctive urges; genetic memory.
2	Purple	Placate spirit realm; honor ancestors; protection from harm; family bonds; respect elders; safety for tribe.
3	Red	Power/action; asserting self to dominate others and nature; control; sensory pleasure; avoid shame.
4	Blue	Stability/order; obedience to earn reward later; meaning; purpose; certainty; Truth; the reason to live and die.
5	Orange	Opportunity/success; competing to achieve; influence; autonomy; mastery of nature; understanding self.
6	Green	Harmony/love; joining for mutual growth; awareness; belonging; spirituality and consciousness.
7	Yellow	Independence/self-worth; fitting a sustainable living system; knowing; the big questions; the long view.
8	Turquoise	Global community without exploitation; understanding of life energies; survival of life on a fragile Earth.

Source: Cowan and Todorovic (2000, adapted).

Cowan and Todorovic (2000) point out that, organizations could adjust its management system to fit the person; the school could match teacher, student, and method. The authors warn that if this is not done, people will lose mind power and interest. According to the authors, getting the right person into the right job with the right materials at the right time within the right systems and structures is what SD is about.

The World Values Survey (WVS) and Ray's Cultural Creative are other values-based systems that are similar to Maslow's Hierarchy of Needs and Spiral Dynamics (HINES, 2013). According to Hines (2013), values can be synthesized into four main types: traditional, modern, post-modern and integral.

Traditional values are focused on following the rules, respect for authority, religious faith. They are closely related to the SD's blue values presented on Exhibit 1. Modern values focus on achievement, emphasizing consumption and are equivalent to SD's orange values. Post-Modern values emphasize the search for meaning in one's life and has self-expression as a priority, being equivalent to SD's green values. Integral values emphasize the need to adjust values to fit each particular situation, enabling one to pursue personal growth, relating to SD's yellow and turquoise values.

Traditional values were dominant for centuries. Modern values arose and grew in numbers with the advent of industrial revolution. Postmodern values



emerged with the information and service society just some decades ago, and Integral values, the newest on the scene, emerged perhaps a decade or two ago (HINES, 2011b).

Considering all the above mentioned, the challenge is to communicate, develop, motivate, and manage those people in ways that fit who they are now and prepare systems for who people will become next. That includes work teams' design and their potential to motivate and engage people with different values to create new knowledge, improving organizational performance (COWAN; TODOROVIC, 2000).

### **3. RESEARCH DESIGN**

The main purpose of this paper is to characterize relationships between teams' design (with a focus on autonomy) and individual values with the effectiveness of knowledge management at the shop floor by means of a literature review. Specifically, the analysis also aims to identify:

- How human awareness (values, culture) affects teams' performance in terms of knowledge management;
- How teamwork design, with a focus on teams' autonomy levels, impacts teams performance in terms of knowledge management;
- How knowledge management (and sharing) affects teams' performance.

In terms of its objectives, this is a descriptive research, for it is focused on identify and present the already developed research on the above-mentioned fields. However, it also presents some features of an explanatory research for it aims to provide a categorization of these studies and how they interrelate with each other. The reason a systematic literature review was chosen is due to its strategic and rigorous manner of conducting the literature review, which allows one to identify gaps in the theory, which can be explored later on (COOK et al., 1997).

To develop the paper, three main steps to categorize studies were defined: open coding, axial coding and selective coding (data analysis) processes. Basically, open coding is the process of reading papers and summarizing their characteristics in terms of method and objectives, creating very narrow and specifically defined categories and allocating papers to them. The axial coding correlates and identifies relationships among the open codes, consolidating them into more broad and useful

categories. Finally, the selective coding process rescues the research question in order to develop core categories and compare them with the research's initial aims, figuring out literature gaps (DROHOMERETSKI et al, 2015; CHO; LI, 2014).

The research was divided into eight main phases, according to FIG. 2

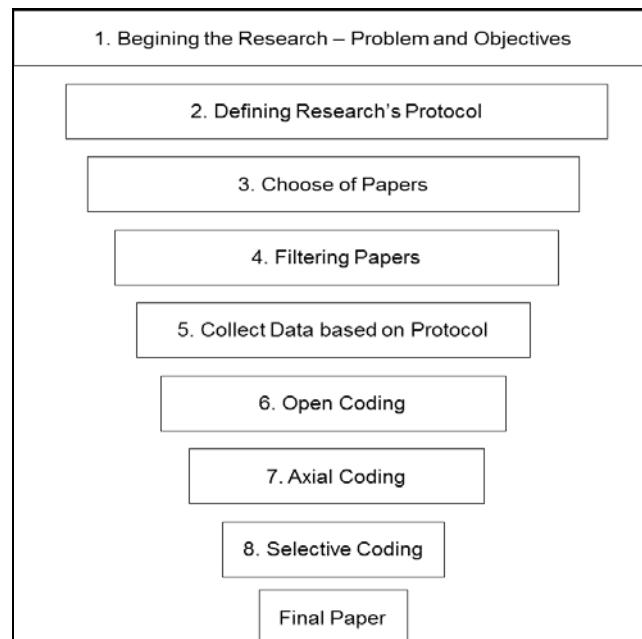


Figure 2: Framework of the Research methodology  
SOURCE: The authors (2018).

To initiate the papers search, the authors used these available databases: Scopus (Elsevier); OneFile (GALE); MEDLINE/PubMed (NLM); Science Citation Index Expanded (Web of Science); ProQuest Advanced Technologies & Aerospace Collection; Social Sciences Citation Index (Web of Science); Technology Research Database; SciVerse ScienceDirect (Elsevier); Materials Research Database; Wiley Online Library; ASSIA: Applied Social Science Index and Abstracts; Engineering Research Database; Materials Business File; Advanced Technologies Database with Aerospace; Emerald Journals (Emerald Group Publishing); Mechanical & Transportation Engineering Abstracts; Computer and Information Systems Abstracts; ERIC (U.S. Dept. of Education); Civil Engineering Abstracts; ANTE: Abstracts in New Technology & Engineering.

The main limitation found by the authors (regarding journals' availability) was related to crossed referenced searches, that were done all the times it was decided to include in the research a paper that was cited in another one. Most of times the papers found by this method were out of reach due to database limitations. Due to

this fact, some important references might have been left out of this paper. The paper search focused on the period comprehended from 2000 to 2015.

The strategy to optimize the search was to divide it into three search windows, and at each one apply the defined variables and their equivalent keywords to find as many results as possible simultaneously. A string's model was structured to help on the research. As an example, the "Teamworking" variable gave birth to the following string: "Teamworking" OR "Semi-Autonomous Groups" OR "Autonomous Groups" OR "Team work".

The three variables focused by the research (Knowledge Management, Teamworking and Human Values) were deployed into the following keywords (using the string code cited before): Knowledge Management; Knowledge Sharing; Knowledge Management on the shop floor; High-involvement Innovation; Teamworking; Team work; Semi-autonomous Groups; autonomous groups; Levels of Consciousness; Levels of Human Development; Worldviews; Values.

At the beginning of the search process, all possible filters (period, language, and article) were used to refine journals findings, focusing exactly in the research questions. For example, in the search for "autonomous teams", the category "Robotics" was disabled, because this issue wasn't related to the research questions presented in the study. This sort of action diminished the numbers of papers found from (approximately) 312.000 to 10.000 papers, considering all those three main subjects: Knowledge Management, Teamworking and Human Values on the shop floor.

Using these criteria, the authors evaluated titles and abstracts in order to make sure they were related to research objectives, which limited the search further to 131 publications. This process was performed in two subsequent steps: i) discarding papers which focus was different from Business companies with an industrial context and those which conclusions couldn't be at least extrapolated to the shop floor context; ii) Discarding those papers that didn't explore the relationship between the variable under study and at least one of the other two variables. Exhibit 2 shows the amount of papers per journal and the Exhibit 3 the amount of papers per year of publication.

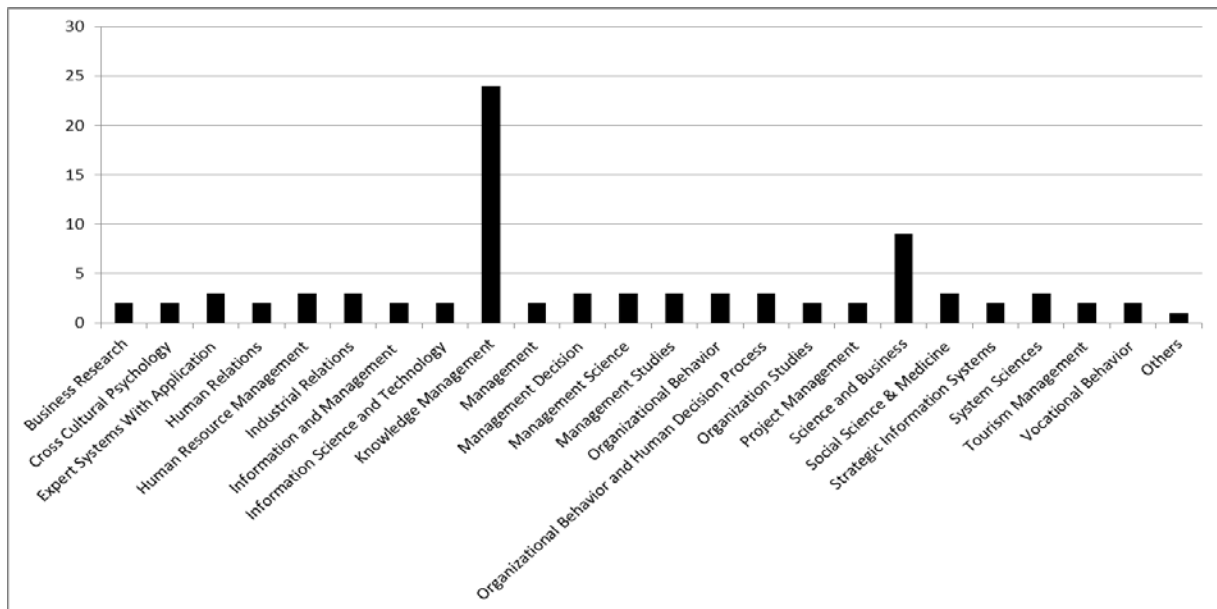


Exhibit 2: Papers per journal.

Source: The authors (2018).

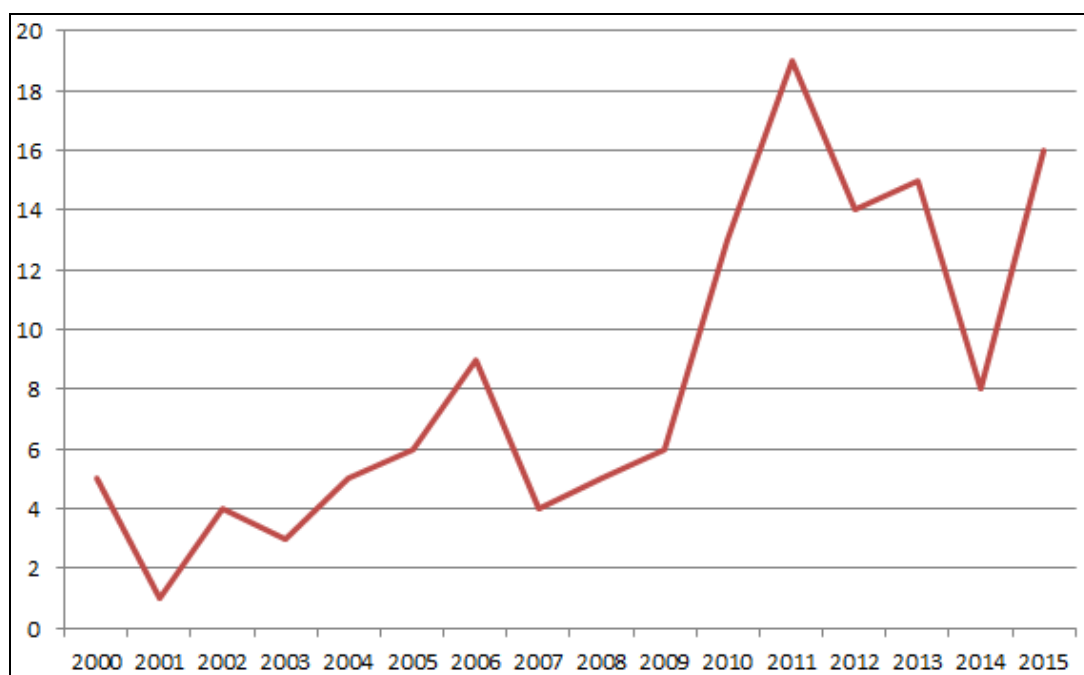


Exhibit 3: Publications per year

Source: The authors (2018).

The focus on industrial shop floor was assured in a broad fashion. Only papers presenting results that could not be extrapolated to the shop floor environment were discarded. For example, a paper focusing students values and their behavior within teams was kept, for its aim was to explore the correlations between teams' structure and teams' effectiveness (and so could be applied to a shop floor environment).

On the other hand, a paper focusing on the relationship of nurses' teams and their patients was discarded, for a very specific relationship from a healthcare context was under exploration, with no possibility of extrapolation for the shop floor environment.

During the reading process, the following information regarding each paper were collected: title, keywords, authors, journal, abstract, objective, method, findings, publication's year. The 131 papers were analyzed by its type, and were carefully categorized using the open coding method, followed by axial coding and finally the selective coding.

The codings development and the categorization process were based on the data extracted as defined in the research protocol. This process started by mapping the paper's main objective, extracted from the abstract and/or the introduction, and analyzing the content section and the findings section.

This process generated a large number of categories that were gathered according to the similarity of themes. For example, the study by Devaro (2008) was recorded as "The effects of Self-Managed and Closely Managed Teams on Labor Productivity and Product Quality". This paper was open coded as "How teamworking affects organizational performance" and then categorized as "Performance" during the axial coding process.

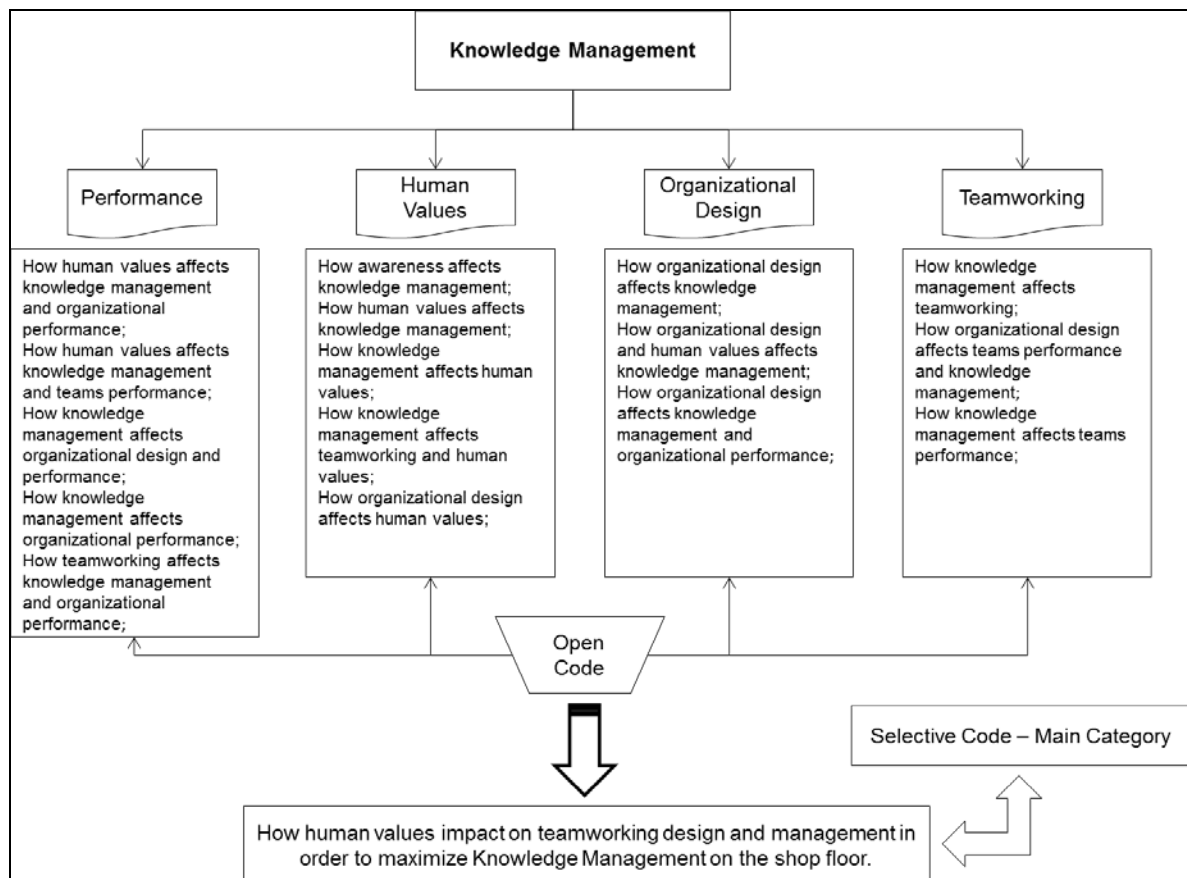
#### **4. FINDINGS**

With all papers collected and divided into folders, the open coding was developed. The frameworks were settled by categories (Exhibit 4 to 18 shows the open and the axial codes for each variable). The axial categorization was performed aggregating the categories of the open coding into more broad categories related to the aim of the study.

As an instance, for the variable "Knowledge Management", five different open codes (all of them focusing performance related issues within the Knowledge Management context) were aggregated into just one axial category named "Performance". As shown in Exhibit 4, "Performance", "Human Values", "Organizational Design", and "Teamworking" are the main categories on which papers focusing primarily on "Knowledge Management" were divided into. In a similar fashion, as it can be seen in Exhibit 9, papers focusing mainly on

“Teamworking” were divided into five categories: “Performance”, “Knowledge Management”, “Organizational Design”, “Autonomy” and “Human Values”. Finally, papers focusing primarily on “Human Values” were divided into only three categories, as shown in Exhibit 15: “Organization Design”, “Knowledge Management” and “Performance”.

In all three categorizations (as designed in Exhibits 4, 9 and 15), the focus was to identify papers which investigate how human values impact on teamworking design and management in order to maximize knowledge creation in the shop floor. Therefore, this was the selective coding defined for all three coding processes conducted as shown in Exhibit 19.



**Exhibit 4: Open and Axial Coding - Knowledge Management.**

Source: The authors (2018)

After the conclusion of the axial coding for each one of the three variables, each group of axial categories (related to one of the variables) was cross-checked with the other two groups in order to identify possible redundancies. In this process, three sets of redundant categories were identified, for in each of them the same interplay of variables were under investigation.

For example, one of the three axial categories for the variable “Teamworking” was “Human Values”, which included all papers focused on the impact of human values in teamworking. Besides, one of the five axial categories for the variable “Human Values” was “Teamworking”, including all papers aiming to investigate how teamworking relates to human values. So, these two categories were fused into just one, presented as one of the nine areas of research in Exhibit 20.

Exhibit 5 to 8 presents frameworks containing all those references which were categorized in open and axial coding, in this case, knowledge management and its subdivisions.

**Exhibit 1: Knowledge Management – Performance**

Category	References	Nº of Papers
How human values affects knowledge management and organizational performance;	C. Yang, K.C. Yang, S.Y. Tseng (2009); Keith and Alan (2003); Tsung-Hsien Kuo (2013);	3
How human values affects knowledge management and teams performance;		
How knowledge management affects organizational design and performance;		
How knowledge management affects organizational performance;		3
How teamworking affects knowledge management and organizational performance;	Abraham, Roy and Roni (2013); Yanfei, Pingfeng and Jingjing (2010); Sandy and Jane (2008).	5
	Wei, Baiyin and Gary (2010), Robert and Kataryna (2015); Arturo, Antonio and Rafael (2015); Holsapplea and Joshib (2000); Vorakulpipat and Rezgui (2006);	11
	Bijaya and Uday (2010); Satyendra and Andrew (2013); Jenny (2005); Brian, Theodore and John (2009); Martine and Morten (2007); Zhining and Nianxing (2012); Wang, Lan and Xie (2008);	1



Ghiyoung and Arun (2008); Josune, Nekane and Olga (2009); Jorge, Edgard and Geilson (2010); Nonaka (2006);

Meng, Jeou and Yu-Ha (2009);

Source: The Authors (2018)

**Exhibit 2: Knowledge Management – Human Values**

Category	References	Nº of Papers
How awareness affects knowledge management;	Janet and Alton (2013); John, Evangelia, Louise and Russell (2015).	2
How human values affects knowledge management;		17
How knowledge management affects human values;	Sheng, Raymond and Zhong (2011); Ren, Ming and Gwo (2011); Dennis, Peter, Scott and Peter (2002); Marylene (2009); Carol, Robert, Davison and Louie (2015); Gian, Karen and Mark (2012); Hsiu-Fen and Gwo (2006); Vincent and Qiping (2010); KyeongNam, Siew Fan, Younghoon and Myeong (2015); Kristiina, Ulf and Tomi (2012); Dianne, Susan and Tim (2015); Minna, Nelli, Ari and Niklas (2015); Rodney, Sandra and Jian (2012); Dianne and Sandy (2005); Kate and Brian (2000); Mark, Juri, Volkmar and Volker (2013); Wolfgang, Sonja and Lukas (2010);	5
How knowledge management affects teamworking and human values;		1
How organizational design affects human values;	Fariza, James and Peter (2011); Susan, Alan, Diana and Priscilla (2013); Susan, Alan and Diana (2006); Lucy, Hyoun, Margaret and Jin (2013); Zhou and Xiaowen (2015);	1
	George (2013);	
	Mika and Graham (2015);	

Source: The Authors (2016).

**Exhibit 3: Knowledge Management – Organizational Design**

Category	References	Nº of Papers
How organizational design affects knowledge management;	Cristina and Tung (2015);	25



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How organizational design and human values affects knowledge management;	Visvalingam and Manjit (2011); Luu (2012); Margit and Bruno (2000); Luu (2013); Eoin and Marian (2011); Jen-Te (2007); Seigyoung and Bulent (2013);	1
How organizational design affects knowledge management and organizational performance;	Ghulam, Muhammad, Usman, Olivier, Afsheen and Rizwan (2014);	1
How organizational design and knowledge management affects teams performance;	Jelle, Jeroen, Arjan and Wendy (2014); Niels, Hans and Peter (2011); Anna, Bambang, Glen and Vaughan (2013); Su-Wan, Young and Joon (2011); Bard, Robert and Anders (2012); Leonardo, Pablo and Alejandro (2011); Fatemeh and Leila (2014); Kathryn and Abhishek (2002); Antonio and Juan (2015); Vincenzo and Sara (2015); Zhenzhong, Yufang, Jie Wu, Weiwei and Liyun (2014); Angela (2013); Aliona, Fahame, Tillmann	1



and Armin  
(2015);  
Davi, Jorge  
and Edgard  
(2013);  
Eun Yun  
(2013);

Yong,  
Donna and  
Hee (2012);

Zhen,  
Yuqiang  
and Luning  
(2012);

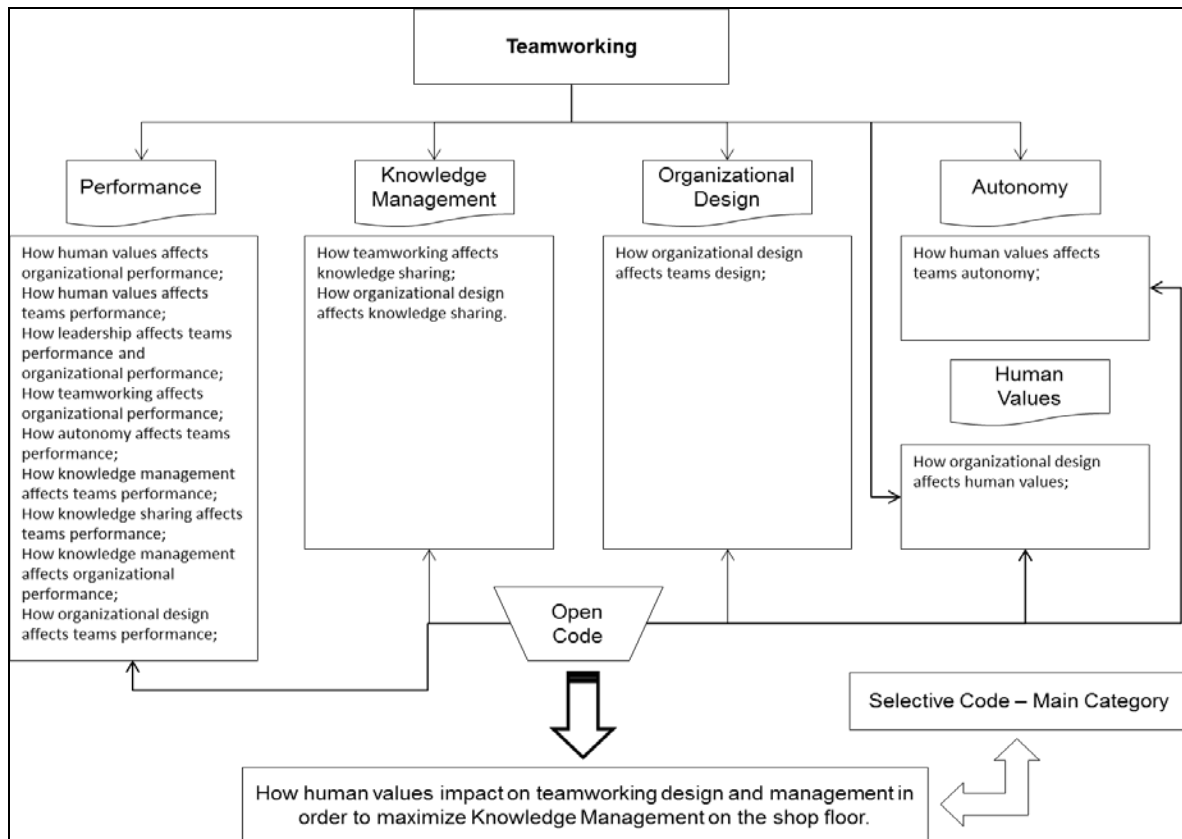
Source: The Authors (2018).

#### Exhibit 4: Knowledge Management – Teamworking

Category	References	Nº of Papers related
How knowledge management affects teamworking;	Jukka, Ari, Juha (2004);	1
How organizational design affects teams performance and knowledge management;		
How knowledge management affects teams performance.	Mary, Melinda and Sherry (2006);	1
		5
	Julie, Marleen and Maura (2010); Kumaresan and Swarooprani (2015); John, Tekeisha and Jeff (2012); Yuwen and James (2011); Melissa (2012);	

Source: The Authors (2016).

Exhibit 9 presents a diagram of the open coding and axial coding which focused on “Teamworking” subject. This code was divided into five categories, as shown below.



**Exhibit 5: Open and Axial Coding – Teamworking.**  
 Source: The authors (2018)

Exhibit 10 to 14 presents categorized references (in open coding and axial coding) about teamworking keyword, and its classes.

**Exhibit 6: Teamworking – Performance**

Category	References	Nº of Papers
How human values affects organizational performance;	Simon Lewin, Scott Reeves (2011); Cristina B. Gibson and Dana M. McDaniel (2010);	2
How human values affects teams performance;	Seigyoung, Stavroula, Bulent and Aypar (2014); Robert R., Christopher H. and Jeremy B. (2011); Taly and Miriam (2005); Kevin, Greg and Aaron (2011); Gerben and Onne Janssen (2003); Gilad, Ruth, Richard, John E. and Steve W. (2006); Gilad, Chen and Ruth (2006); Constantine, Ingrid M and Andrea B (2011); Aled and Delyth (2011); Len, Henk, Alan and Julia (2011); Aída, Piet Van, Miriam, Ramon and Francisco (2014); Jonas, Monica (2012); Janka (2007); Jed Devaro (2008);	11
How leadership affects teams performance and organizational performance;		2
How teamworking affects organizational performance;		4
How autonomy affects teams performance;		1
How knowledge management affects teams performance;		4
How knowledge sharing affects teams performance;		1
How knowledge management affects organizational performance;		1
How organizational design affects teams performance		4

Rachael, Mark, Patrick (2010); Rosemary Batt (2004); Takao Kato, Motohiro Morishima (2002); Celso Alves (2010); Celia, Jaime (2005), Sun Young, Jin Nam (2012); Martin J, Oliver (2000); Peter H. Gray (2000); Piet Van, Wim Gijsselaers, Mien, Geert, Paul (2011); Shenjiang and Xiaoyun (2010); Ben and Marco (2005); Daniel, Marie, Caroline and Sebastien (2011); Camelo, Fernandez and Martinez (2006); Svin, Martin, Pieter, Cathy, Massimiliano, Walter and Kris (2012)

Source: The Authors (2018)

**Exhibit 7: Teamworking – Knowledge Management**

Category	References	Numbers of Papers Related
How teamworking affects knowledge sharing;	Jonathon (2004);	2
How organizational design affects knowledge sharing;	Enno, Sridhar and Aleda (2007);	1

Source: The Authors (20168)

**Exhibit 8: Teamworking – Organizational Design**

Category	References	Numbers of Papers Related
How organizational design affects teams design;	David and Stuart (2002);	1

Source: The Authors (2018)

**Exhibit 9: Teamworking - Autonomy**

Category	References	Numbers of Papers Related
How human values affects teams autonomy;	Se-Hyung (2012);	1

Source: The Authors (2018)

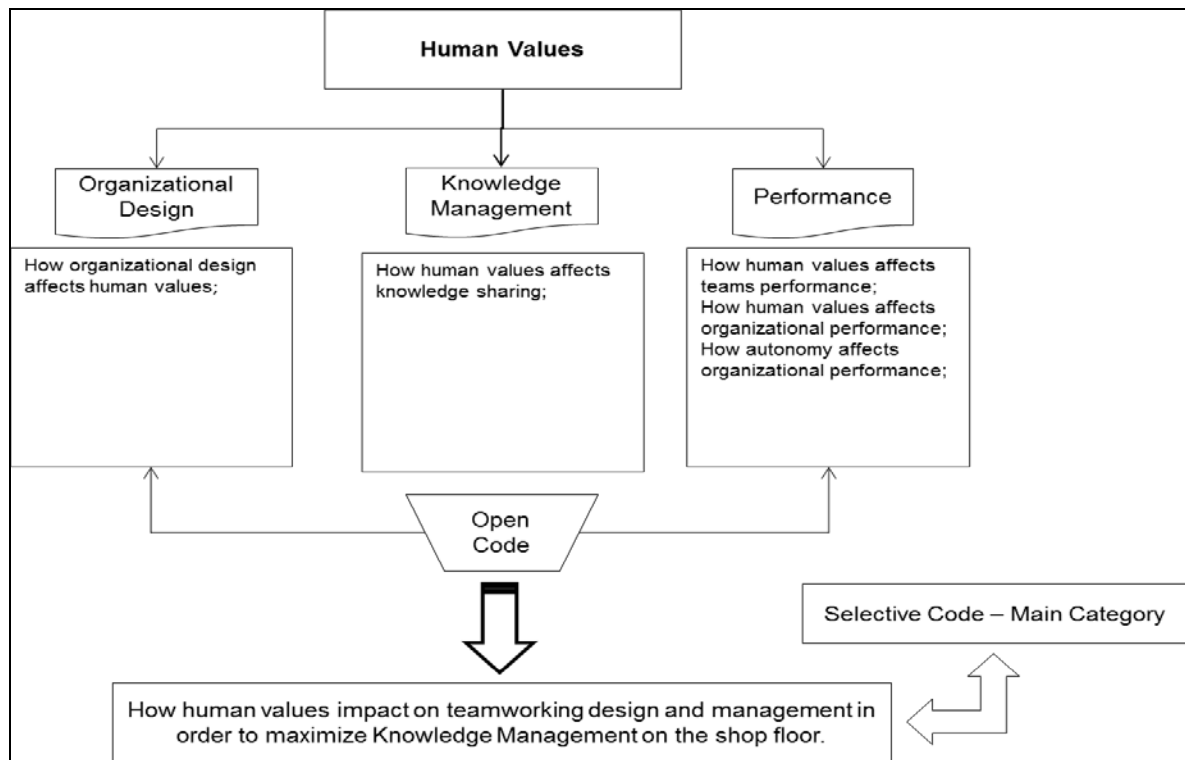
**Exhibit 10: Teamworking – Human Values**

Category	References	Numbers of Papers Related
How organizational design affects human values	Alexandra, Nale, Simone and Angela (2010);	1

Source: The Authors (2018)



Exhibit 15 presents a graph of the open and axial coding, delimited in the subject “Human Values. This coding was labeled into three categories, as shown below.



**Exhibit 11: Open and Axial Coding – Human Values.**

Source: The authors (2018).

Exhibit 16 to 18 presents categorized references (in open coding and axial coding) about human value keyword, and its classes.

**Exhibit 12: Human Values - Organizational Design**

Category	References	Nº of Papers
How organizational design affects human values;	Marylène and Edward (2005); Manu, Vinod and Mandeep (2014); Amal and Mohammad (2011); Setyabudi and Siti (2014); Robert, Robert and Carole (2008);	5

Source: The Authors (2018).

**Exhibit 13: Human Values – Knowledge Management**

Category	References	Nº of Papers
How human values affects knowledge sharing;	Kurt, Birgit, Julia, Stephan and Todd (2003);	1

Source: The Authors (2018).

**Exhibit 14: Human Values –Performance**

Category	References	Nº of Papers
How human values affects teams performance;	Ci-Rongli, Chen-Julian, Yun-Hsiangtien and Chien-Mingchen (2015); Barry Strauch (2010);	5
How human values affects organizational performance;	Bradley and Debra (2001); Taewon (2013), Karen, Paul, Menno Vos (2009).	
How autonomy affects organizational performance;		1

Exhibit 19 presents the three axial categories put together to form a whole regarding the interrelations of the three variables. This process was performed to assure that the main objective of this research, i.e., to identify the influence of the values of team members on their teams' performance in terms of knowledge sharing and creation was accomplished (or not) by one or more of the selected papers.

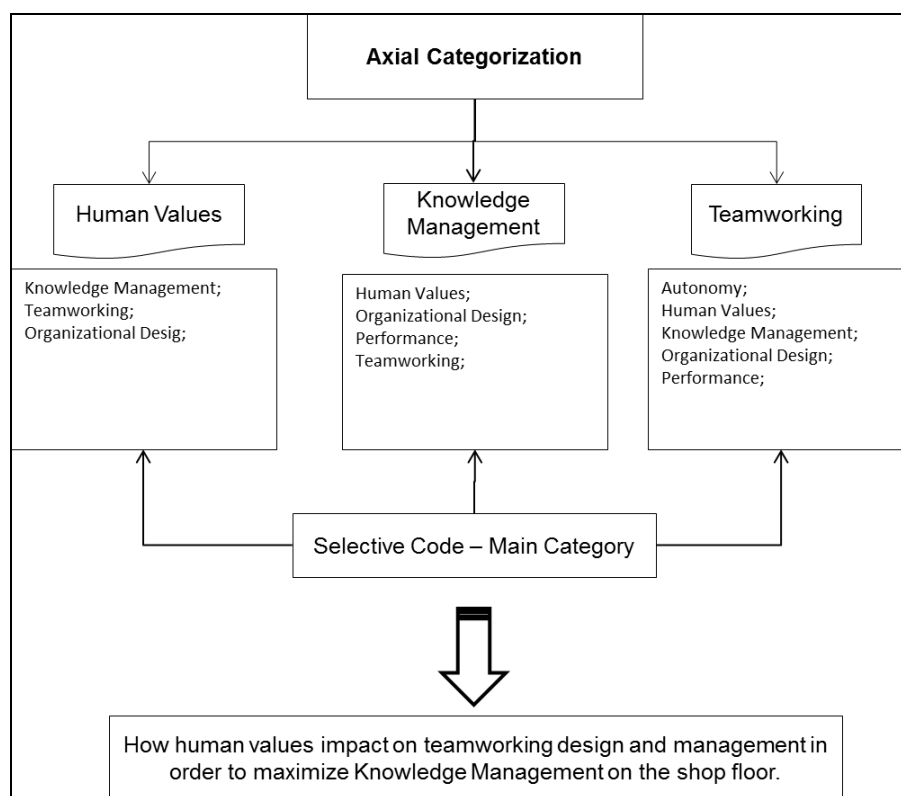


Exhibit 15: Axial Categorization – Interrelations between the three variables.

Source: The authors (2016).

Considering the crossed aspects of the Axial Coding performed, it was possible to define nine main areas of research in the interplay of the three variables. These areas are shown in Exhibit 20.

Exhibit 16: Areas of research

Areas of Research	Main Subjects Investigated
1. Human Values vs. Knowledge Management	Investigate how Human Values affects Knowledge Management sharing and creation.
2. Human Values vs. Teamworking	Focus on the role played by human values and culture on teams' effectiveness.
3. Human Values vs. Organizational	Investigate the interplay of the two variables,

Design				focusing on both how organizational design effectiveness is affected by human values and culture and how organizational design can change human values.
4. Knowledge Organizational Design	Management	vs.		Focus on types of Organizational Designs that enable a better Knowledge sharing and creation
5. Knowledge Performance	Management	vs.		Focus on both how knowledge management initiatives enhances organizational performance and how to measure Knowledge Management performance.
6. Knowledge Teamworking	Management	vs.		Explore how Knowledge Management is affected by teamworking.
7. Teamworking vs. autonomy				Investigate the role played by autonomy in teamworking effectiveness.
8. Teamworking vs organizational design				Explore the interplay of teamworking and organizational design in a macro-level, i.e., how teamworking affects organizational design effectiveness and how organizational design in a macro level limits teamworking performance.
9. Teamworking vs. Performance				Investigate how to improve teamworking performance.

Source: The authors (2016).

In this regard, many studies emphasized the impact of workers' consciousness levels on Knowledge creation. Authors such as Matzler et al. (2008) conducted an empirical study on which it was identified that individual's consciousness levels impacts knowledge sharing performance. In a similar way, Glazer et al. (2004) made cross-cultural comparisons, collecting data from workers from different countries such as Hungary, Italy, UK and USA. The authors found that values influence people's commitment with the organizations and human values are influenced by national culture.

Accordingly, on a study developed by Taewon Moon (2013), it was found that cultural values affects human values, which in consequence, affects teamworking. Pais (2010), in a study of self-managed teams, described an increase of commitment and productivity when people experienced autonomy. On the other hand, Devaro (2008) found that there is no statistically significant difference between the predicted gains from autonomous against non-autonomous teams. The opposition between these two findings indicates that there is something in-between autonomy and team effectiveness, i.e., there might be a modulator of these two variables, inhibiting a direct causal relationship between teams' autonomy and teams' performance.

Intrinsic and extrinsic motivation influences workers' intention to share knowledge, but also, results and job oriented cultures have positive impacts on employee's intention in the knowledge management process. Some studies showed



the importance of a trust environment in order for workers to want to share their knowledge and their own experiences with their teams.

A strong positive relationship was found between trust and knowledge sharing for all types of teams (local, hybrid and distributed), but the relationship was stronger when task interdependence was low, supporting the position that trust is more critical than autonomy as a driver of knowledge sharing and creation (STAPLES; WEBSTER, 2008).

Worker's lack of consciousness may negatively affect the intention to share knowledge, consequently guiding to a weak decision-making and communication in organizations. Also, it limits the organization in some aspects like the ability to refuse external risks, implement innovation and managing risks (ISRAILIDIS et al., 2015). This result implies that more complex levels of consciousness and values are needed to cope with the volatility, uncertainty, complexity and ambiguity increasing, typical of the new industrial environment.

Finally, it wasn't possible to identify a study aimed in the analysis of the impact of team member values on different teams' designs effectiveness in terms of knowledge sharing and creation, what represents an important literature gap to be explored in subsequent researches.

## **5. CONCLUSION**

It was possible to identify in the literature many works emphasizing how human values affect teams and their performance regarding knowledge management. Furthermore, the impacts knowledge sharing and management have on organizational performance is the focus of many of the identified papers.

Finally, it was also possible to find many papers focused on the interplay of organizational and teams design, knowledge management and sharing and human values. Nevertheless, a gap was identified on the subject of how human values impact on teamworking design and management in order to maximize knowledge management on the shop floor.

Despite the fact that nine different categories of studies were identified, all of them were focused on the interplay of only two of the three variables that were the focus of this research. This finding alone represents the accomplishment of one of the research's main objectives, i. e., identifying a gap in the literature.



A systematic literature review offers a well guided manner to design a protocol which purpose has to find an important gap within the existing literature. The systematic review implemented by the authors provides a clear content classification of three important research areas: teamworking, knowledge management and human values. As a result of this process, it was possible to identify nine different areas of research, that have already been explored by the authors in the field, and one additional research area, defined by the gap presented in the former paragraph.

Among the main limitations of this study, data collection period (2000 to 2015) is one of the main; however, these time limits were established in order to identify the most recent literature and practices on the shop floor, what diminishes its impacts.

To identify the quantitative and qualitative evolution of the measures and practices, it would be necessary to carry out a longitudinal study of the literature, which deviates from the focus of this particular work. Another limitation is with regard to the databases used and the ability to access them, what have been mentioned before in the Methods section.

Furthermore, the study provided many insights into the terms most used for its three main variables. For example, it was realized that for most authors in the field, the term “self-managed teams” refers to all types of teamwork without a formal supervision defined by the management level.

For future work, it is suggested that the categories defined in this study can help organize other knowledge management, teamworking and workers’ values studies. Furthermore and most of all, it is suggested that the interplay of team members’ values and teamwork design and their impact on knowledge management performance on the shop floor constitutes a new field of study in the area.

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