

# University management: the lean production allied to the program quality of life at work

**Gestão universitária: a produção enxuta aliada ao programa qualidade de vida no trabalho**

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**Abstract:** This article is a “cut-off” of a research that bears the title: Model of University Management: a look at governance from the Balanced Scorecard (BSC) of an Institution of Higher Education Community (CIHE) in southern Brazil. This is a qualitative case study based on Quality of Life at Work. The issue addressed here is: Under the guise of the principles of lean production, how is the quality of life and quality of life at work, of the staff of the student service sector of a CIHE? Our objective is, as of the mapping of the value stream, to identify how the quality of life and quality of life evaluations in the work of employees of the sector of student assistance of a CIHE. The instruments for data collection are: Value Stream Mapping (VSM); questionnaires and observation. The VSM results indicate a significant loss of time among operations. However, the results of the WHOQOL-bref questionnaire go from a very satisfactory and satisfactory quality of life. Finally, the results of the QWLQ-bref questionnaire demonstrate that quality of life at work is satisfactory. The study suggests improvements to optimize processes reduce losses and ensure satisfaction and quality in customer service.

**Keywords:** University management; Lean production; Life quality.

**Resumo:** Este artigo é recorte de uma pesquisa que traz por título: Modelo de Gestão Universitária: um olhar para a governança a partir do Balanced Scorecard (BSC) de uma Instituição de Ensino Superior Comunitária (IESC) do Sul do Brasil. Trata-se de um estudo de caso, do tipo qualitativo. O recorte tem por eixo a Qualidade de Vida no Trabalho. A questão aqui abordada é: Sob o olhar dos princípios da produção enxuta, como está a qualidade de vida e qualidade de vida no trabalho, dos colaboradores do setor de atendimento ao aluno de uma IESC? Nosso objetivo é, a partir do mapeamento do fluxo de valor, identificar como se comportam as avaliações de qualidade de vida e qualidade de vida no trabalho dos colaboradores do setor de atendimento ao aluno de uma IESC. Os instrumentos para a coleta de dados são: Mapeamento de Fluxo de Valor (MFV); questionários e observação. Os resultados do MFV apontam perda significativa de tempo entre operações. Já os resultados do questionário WHOQOL-bref transitam entre uma qualidade de vida muito satisfatória e satisfatória. Por fim, os resultados do questionário QWLQ-bref demonstram que a qualidade de vida no trabalho é satisfatória. O estudo sugere melhorias para otimizar processos, reduzir perdas e garantir satisfação e qualidade nos serviços prestados ao cliente.

**Palavras-chave:** Gestão universitária; Produção enxuta; Qualidade de vida.

## 1 Introduction

Increasingly, there is an increase in the competitive level of large companies, which try to adapt to globalization and, consequently, a greater requirement

of customers and employees. This makes them constantly seek strategies to improve their attributes and qualities, increasing their competitiveness.

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Managers, for their part, are encouraged to make decisions that aim at the company's profitability (Pergher et al., 2011; Glaser-Segura et al., 2011).

A unique example of decision making for better profitability comes from Japan that after a crisis and Toyota Motor Company suffering the consequences of it, in 1950 Eiji Toyoda, one of the heirs of the company, goes to the US to study Ford production. On his return to Japan and together with his employee Taichii Ohno, they give rise to the early spheres of lean production (Dennis, 2008).

In the late 1960s, Ohno had already transformed Toyota's production. Based on 14 principles, he diffused what today is known as the Toyota Production System (TPS). In the USA the great researchers of this system are James Womack and Daniel Jones. Through them came the term "lean production" (Glaser-Segura et al., 2011; Liker, 2006).

Such production has its main focus on the customer and the heart of the system lies in the team's involvement. Ohno, at Toyota, had already realized that the worker was its most precious asset and most benefited from this system that is based on a long-term philosophy. According to Toyota thinking people are the soul of the process as they literally blend in with the product. Thus, a good result depends on their involvement to reach it (Liker & Hoseus, 2009).

Based on this thinking, this research transposes the manufacturing environment, where other jobs with lean production have had excellent results (Dennis, 2008), and starts to look at the service sector with this lean perspective. Thus, our main point of study will be the people involved in the process and how they keep under the look from the principles of lean production to improve their processes.

When we talk about the people of a company, today we know that high rates of sick leave. Among the most frequent causes are mental illness and hypertension. With the high costs of medical care and what this has to do with loss to the company when there is a staff member away, there is a growing search for quality of life programs in the work environment, reinforcing the look on the people in the process (Pontes, 2006; Ogata & Simurro, 2009).

Quality of life is understood as the individual's perception of his position in life, in the spheres of culture and values and also in relation to his expectations, standards and concerns (OMS, 1995). In this context, this concept could be further updated by including the social and environmental spheres. And thinking about all the changes that the work environment has gone through, Limongi-França (2008) brings the concept of quality of life at work. This would be the person's ability to manage all the actions of the work environment, aligned with the organizational culture, with a view to prioritizing

the well-being of the organization's people (Ogata & Simurro, 2009).

We call the attention to our study that seeks to transpose the literature look preferentially to the manufacturing, the goods and services industry. Our look rests on an institution of higher education with its own specific peculiarities of its nature and purposes.

Therefore, the question that arises in this article is: Under the look of the principles of lean production, how is the quality of life and the quality of life at work, of the collaborators of the student service sector of a Community Higher Education Institution (CHEI)?

## 2 Theoretical reference

### 2.1 The Toyota thought

Today, known worldwide as Toyota Production System, the Toyota thought developed from a financial crisis in Japan. This caused one of Toyota's engineers to look for a solution in the USA that would change its reality and be a solution to long term (Liker & Hoseus, 2009). In the late 1950s, Taiichi Ohno, Toyota's master of production, managed to establish all the innovations and even after mass layoffs due to the crisis, he had managed to recapture his employees and bring an innovative concept that the worker was his most valuable resource (Dennis, 2008).

For these changes the Toyota Production System is based on 14 principles, which follow:

1. Base administrative decisions on a long-term philosophy, even to the detriment of short-term financial goals;
2. Create a continuous process flow to bring problems to the forefront;
3. Use pulled systems to avoid overproduction;
4. Level the workload;
5. Build a culture of stopping and solving problems, getting quality right on the first try;
6. Standardized tasks are the basis for continuous improvement and empowerment of employees;
7. Use visual control so that no problem is hidden;
8. Use only technology that is reliable and fully tested that meets employees and processes;
9. Develop leaders who fully understand the work; that they live philosophy and teach it to others;
10. Develop exceptional people and teams who follow the philosophy of the company;
11. Respect its network of partners and suppliers by challenging them and helping them to improve;

12. See for yourself to fully understand the situation;
13. Make decisions slowly by consensus, fully considering all options, implement them quickly;
14. Becoming a learning organization through tireless reflection and continuous improvement (Liker, 2006).

Thus, the *modus operandi* of this philosophy is to observe a timeline drawn from the moment the customer makes the request to the point of receiving the payment, in order to reduce it. This reduction is due to the elimination of non-value added waste (Dennis, 2008). Thus, in the United States the term “lean production” arised by the researchers James Womack and Daniel Jones.

### 2.1.1 Lean production

The lean production has its main focus on the customer and the heart of the system lies in the team’s involvement. It is about a long-term philosophy. There are five principles of lean production.

The first principle is to specify value. Value is what the customer defines as the end product, whether it is a process or a service. The second principle is to identify the flow of value, or the value chain, that is, it is necessary to observe the entire production chain, all the activities carried out to arrive at the final result. In these steps it is possible to identify activities inherent to the process that generate value, and waste or losses. The third principle refers to creating value flows, that is, after analyzing the value chain, eliminating the activities considered losses and generating a continuous flow with activities that generate value. The fourth principle is the production pulled, that is, the activities of the process are only initiated according to the demand of the product or service, that is, it does not push products to the consumer, but rather the flow happens to be pulled by them. Finally, the last principle refers to the constant search for perfection, that is, to always seek improvements within the whole process (Greef et al., 2012).

Using these principles and tools derived from them, companies seek to change their philosophy and vision by implementing lean thinking in their services (Dennis, 2008). The first action when thinking about introducing lean production is to use the Value Stream Mapping tool (VSM). This is an extremely important tool. It is a process map that shows us how tasks are being done, how our current situation is, and identifies the possibilities for improvement (Cardoso, 2013; Dennis, 2008).

It is known that the use of this new system brings many advantages for companies, reducing inventories, seeking total quality and involving teamwork. However, it has been observed that these

changes can also negatively affect employees. In this system there is a greater involvement of the team. Production at the right time requires certain care and skill to avoid errors, or else correct them immediately. Workers are pressured to seek new skills as well as master more tasks. For this reason, there are studies to identify the impact that lean production brings to workers (Saurin & Ferreira, 2008; Lages, 2008; Landsbergis et al., 1999).

Lean production is believed to be the most promising and challenging way to organize work. It is known about all the advantages that come with it. Likewise, companies that decide to opt for their principles should take a special look at the health of their employees (Pontes, 2006).

### 2.1.2 Value Flow Mapping - VFM

Value flow is all action, aggregating or not value, necessary for the realization of a product (Rother & Shook, 1999). As mentioned earlier, the value stream map is the first tool to be used when thinking about introducing lean production. According to Hofacker et al. (2012), the purpose of this mapping is to eliminate activities that do not add value, so that the flow of value is increasingly efficient.

Value stream maps are helpful to their participants’ understanding of waste in today’s states. It is a reality often invisible to partners who usually already have many problems within their companies and usually spend much of their time with them. However, if awareness is made but a future state is not achieved, the mapping exercise only creates bureaucracy and even more waste (Jones & Womack, 2011).

For Rother & Shook (1999) the VFM is an extremely simple tool, which can be applied using only pencil and paper. Among the improvements observed from the use of VFM, the following can be cited: it helps to visualize the production flow as a whole, maps waste, provides a common language that facilitates discussion about improvements, provides visualization of actions taken and groups lean manufacturing techniques, creates a basis for a change plan, groups lean manufacturing techniques, creates a basis for a change plan, and relates the flow of information to materials (Rother & Shook, 1999; Hofacker et al., 2012).

Within the VFM there are two flows: the one of material and the one of information. The first presents the material from the raw material to the finished product, indicating quantities, waiting times, processing, wastes, and other information relevant to the project. In turn, the flow of information, as important as the flow of material, tells each process what to manufacture or do next (Rother & Shook, 1999; Hofacker et al., 2012). There are two types of VFM, door to door VFM and extended VFM.

According to the concept of Rother & Shook (1999), the VFM door to door is the starting point for the most inexperienced. Having a limited scope between shipping and receiving from the same company becomes simpler. This tool, through illustrative icons, identifies activities that add value or not to the customer. According to Hofacker et al. (2012), the improvement cycle used is to map the so-called “current state” of a given value stream, which is the starting point for future improvements. These improvements are inserted in the mapping of the “future state”. Next, a plan to eliminate the differences between current and future is drawn up.

According to Jones & Womack (2011), extended mapping is more difficult because it crosses the borders of a single company. Conducting this type of mapping requires a lot of cooperation between departments and companies. The technique is the same, the only difference is the scope. What was previously represented through boxes as stages of a process, now are companies, distribution centers and so on.

## 2.2 Quality of life at work

It is justified to think about the quality of life of the work for the following reasons: the CHEI under study is of a community character with great emphasis on humanistic-Christian philosophy. From this identity stems the care with the whole of the human being. In the same way, it is justified by this CHEI to be in a professionalization process of the management that involves, among others, the implementation of its Quality of Life Program at Work. The proof of this is that the CHEI is competing for the Gaúcho Quality and Productivity Award (GQPA), derived from the National Quality Award, which constitutes the highest recognition of management excellence.

The Management Excellence Model (MEM) is based on a set of fundamental concepts and structured in criteria and requirements inherent in the Excellence in Management. The Fundamentals of Excellence express these internationally recognized concepts that are found in leading World Class organizations. Among these fundamentals we highlight Valuing people and culture - creating favorable and safe conditions for people to develop fully, with emphasis on maximizing performance, diversity and strengthening of beliefs, customs and behavior conducive to excellence (FNQ, 2014). To do so, companies involved in the GQPA should cast their look on the health of employees and their quality of life at work and out of it.

In this scenario, the context of the CHEI under study is justified. The Law 12,881/2013 defines as Higher Education Community Institutions non-profit Private Higher Education Institutions (PHEI) as a new modality in their regulation (Brasil, 2013). Under the

new law, these institutions are popularly known as Communitarian, due to their origin of communities. Thus, a third model of HEI is formalized, with a distinct nature from state and private HEIs for profit. They are HEIs that aim to serve their communities, mainly meeting demands not contemplated by the state.

The Brazilian Universities Consortium (COMUNG) is an association of CIHE in the State of Rio Grande do Sul where CIHE is located and participates in the CIHE in the study. It is one of the Brazilian states that have most community institutions. COMUNG comprises 15 institutions, totals approximately 210,000 students, more than 50% of the total of university students in Rio Grande do Sul, and employs around 9,000 teachers and 10,000 administrative technicians.

The above feature is important to clarify that all the literature until then, deals with private HEIs, not making a distinction between those for profit and those recognized by the new law, as is the case of the HEI under study. Thus, the authors under discussion approach the subject simply as private HEIs in their challenges. This statement is justified by the inexistence of studies on the quality of life at work in the CIHE's employees.

The focus on quality of life programs at work has become important as work withdrawals and sickness pensions have become constant and growing every day (Pontes, 2006; Ogata & Simurro, 2009). Quality of life and quality of life at work may have different interpretations. However, it is already understood that it is necessary to understand these concepts in the organizational environment in order to improve the conditions for the employees to develop their potentials with greater success in the results. The difficulty of implementing quality of life programs at work is still in the relation that some managers identify these initiatives as cost (Odebrech & Pedroso, 2010).

In this sense, lean production reaches the company in order to reduce process losses and consequently reduce costs. When combined with the thought of team involvement and the importance of people in the process, it justifies investment in quality of life programs at work (Odebrech & Pedroso, 2010).

### 2.2.1 Evaluation of quality of life and quality of life at work

In order to evaluate quality of life and quality of life at work, two questionnaires already validated for the Portuguese language can be used: WHO Quality of Life - BREF (WHOQOL-bref) and Quality of Working Life Questionnaire - BREF (QWLQ-bref).

The WHOQOL-bref is the abbreviated version of the WHOQOL-100, a questionnaire developed by the World Health Organization Quality of Life Group to assess quality of life. It is composed of 26 questions,

two of them general aspects and the others divided into four domains: physical, psychological, social relations and environment (Fleck et al., 2000).

The second questionnaire is QWLQ-bref, abbreviated version of QWLQ-78, a WHOQOL-based questionnaire that was developed to assess quality of life at work. It is composed of 20 questions that are also divided into four domains: physical, psychological, personal and professional (Cheremeta et al., 2011). Both are self-administered questionnaires.

### 3 Methodology

This article is a “cut-off” of a research that has the title: University Management Model: a look at governance from the BSC of a CIHE in Southern Brazil. The research is qualitative and is characterized by being a Case Study about the management model of a CIHE in the south of Brazil, of qualitative approach. Its general objective is to understand how the management model, adopted by CIHE contributes to the systemic development in the axes: CIHE identity; management tools; learning and growth of the CIHE; sustainability (economic, financial, social and environmental); quality of life in the organization.

A case study is understood as a study that allows researchers to maintain the full or significant characteristics of events such as: school performance, small groups behavior, and administrative processes (Yin, 2010).

It opted to choose the student service sector (CSC - Customer Service Center), since in the context of CIHE, in addition to the direct contact of the teachers, this sector is one of the ones that has greater contact with the student, which in this case is, therefore, the target customer. Thus, there is a need to map and build together with the leaderships the new proposals resulting from this study.

The sector under study comprises the sectors of protocol, financial, scholarships and financial aids and internships and academic mobility, totaling 30 employees. Initially we developed a pilot study with three employees from the protocol and financial sectors. Afterwards, with the approval of the leaderships, we extended the research to the other collaborators of these sectors and also to the sector of scholarships and financial aid. We finally had a sample of 18 employees.

The first stage of the research was done through observation of the work environment and the processes developed by the collaborators participating in the research. This observation was made in three days. On the first day only in the protocol industry. On the second in the financial sector and on the third in the sector of scholarships and financial aid. According to the orientation of the leaderships, the largest flow of the attendance is from 6:00 PM. For this reason we

started the observation on that schedule time with a duration of 1 hour and 30 minutes on each of the days.

According to Zanchet et al. (2007), to perform the Value Stream Mapping, the first step is to select a family of products or processes that will be mapped and then formulate the MFV of the current state that will identify the possibilities of process improvements. The next steps refer to the formulation of the MFV of the future state and its implementation plan.

In a second moment, the contributors answered the two questionnaires: Who Quality Of Life - BREF (WHOQOL-bref) and Quality of Working Life Questionnaire (BREF) (QWLQ-bref). Both are self-administered questionnaires. After the observations, the two questionnaires were delivered to the collaborators. They were given the orientation of first responding to WHOQOL-bref and then the QWLQ-bref. Each one answered the two questionnaires at his workplace, on a different day from the observations in the early afternoon, and as soon as they finished they delivered them to us.

## 4 Results and discussion

### 4.1 Current value stream map

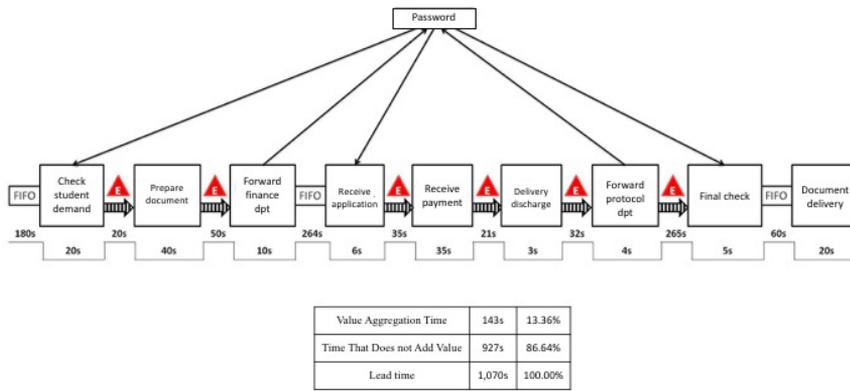
By means of observations and linear descriptions of the processes, the mapping was constructed, allowing the understanding of how the work is carried out, mainly in what refers to the flows of activities and information.

In addition to understanding the stages of the processes, it is possible to visualize, in a schematic way, how the units are integrated, a fact that generates results shared by all departments involved. Figure 1 shows the Current MFV and, in sequence, Chart 1 the Current MFV Indicators.

Only the protocol and financial sectors were evaluated and analyzed because they deal with the sectors that carry out the largest volume of operations and, after the teachers, have greater contact with the students.

The protocol sector carries out, from the macroprocesses, requests for diplomas, teaching plans, history, enrollment certificates, enrollment, re-entry and reopening of course and the financier receives monthly fees, administrative fees and collection.

The student removes the password at the booth; then he is called to the protocol. Arriving at the post of the protocol, the student's demand is verified and the requested document is prepared. After the elaboration, the student is referred to the financier, who calls him with the same password. At the post of the financier the application is closed after the payment of the fee, when the student receives the discharge of the amount due. Then, the student is forwarded back to the protocol, being called again by the same password. At the post of the protocol



**Figure 1.** Current MVF. FIFO = First In First Out; E = Waiting. Source: Authors (2014).

**Chart 1.** Indicators of the Current MFV.

	Concepts	MFVA
Lead time	Time from receipt to delivery to customer	1,070s
Cycle time	Operation with longer production time	40s
Value Aggregation Time	Time of Value-Adding Activities	143s
Time That Does not Add Value	Time of Activities that Do not Add Value	927s

MFV = Value Stream Mapping; MFVA = Current Value Stream Mapping. Source: Authors (2014).

the collaborator gives the conference of discharge and delivers the document to the student.

Since these are two integrated services, we have documents moving between the sectors and, for certain operations, the sectors have a relationship of interdependence. The time that does not add value comprises more than 86% of the time of the whole process. Therefore, the data indicate considerable loss of time, especially when moving internal documents.

Roman et al. (2013), conducted the MVF of an insurance brokerage firm. They also identified a significant difference between the time that adds value and the time that does not add value, and the time losses refer to waiting time. Like our study, the time that does not add value is high and the waiting time refers to the displacement of the documents.

In the study by Zanchet et al. (2007) they developed the MFV of a hospital disinfection center. The losses they identified were in relation to waiting time and material displacement. In this sense, they point out that customer satisfaction depends very much on how it is handled in these delivery speed situations. In their research they elaborated the Future MFV thinking about eliminating wasted time.

It is observed that in this study, as in the researches of Roman et al. (2013) and Zanchet et al. (2007), the time that does not add value (in its majority, in the form of waiting) is much higher than the time it adds value. These findings reinforce the importance of resuming the value flow mapping goal: to eliminate activities that do not add value, so that the flow of value is increasingly efficient (Hofacker et al., 2012).

Moreover, in terms of providing services and guaranteeing satisfaction and quality of service, reducing time that does not add value can justify positive results with the client. It is concluded, from the preliminary analysis of the figure of the MFV, the need for improvements in the optimization of the time, mainly in relation to the displacement of the documents.

### 4.2 Map of future value flow

Since value-flow maps are helpful in helping employees understand about process wastes (Jones & Womack, 2011), this was the starting point for the conversation with industry leaders. From the identification of the possibilities of improvements by the current MFV, improvement proposals were elaborated, which generated the future MFV. Figure 2 shows the Future MFV and Chart 2 the Indicators of the Future MFV.

In this proposal we have the withdrawal of the uncontrolled waiting of the students, represented by the stock figure, replacing it with the FIFO system (first in, first out). Placing a supermarket of documents among the posts of the protocol and the financial, the latter can make the delivery of them without the need for the student to return to the protocol only to withdraw the material.

Similar to the targets of Roman et al. (2013) and Zanchet et al. (2007), these improvements are intended to make the flow more efficient and, consequently, to increase student satisfaction (customers of this process). This proposal was sent to leaders who, in

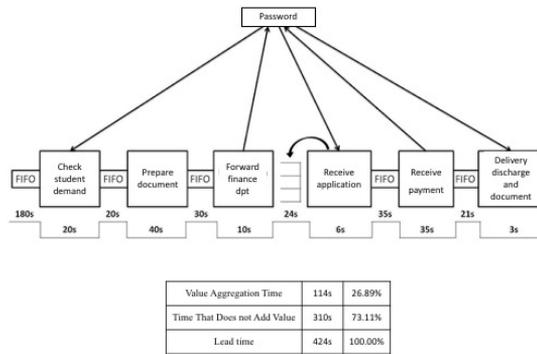


Figure 2. Future MFV. FIFO = First In First Out. Source: Authors (2014).

Chart 2. Indicators of the Future MFV.

	Concepts	MFVF
Lead time	Time from receipt to delivery to customer	424s
Cycle time	Operation with longer production time	40s
Value Aggregation Time	Time of Value-Adding Activities	114s
Time That Does not Add Value	Time of Activities that Do not Add Value	310s

MFV = Value Stream Mapping; MFVF = Future Value Stream Mapping. Source: Authors (2014).

Table 1. Quality of Life at Work - classification scale for QWLQ - bref.

Very unsatisfactory	Unsatisfactory	Neuter	Satisfactory	Very satisfactory
0 to 22.5	22.5 to 45	45 to 55	55 to 77.5	77.5 to 100

Source: Authors (2014).

a meeting with employees, should decide how best to introduce the improvements. Up to the completion of the research, this implementation had not been possible.

### 4.3 Quality of life and quality of life at work

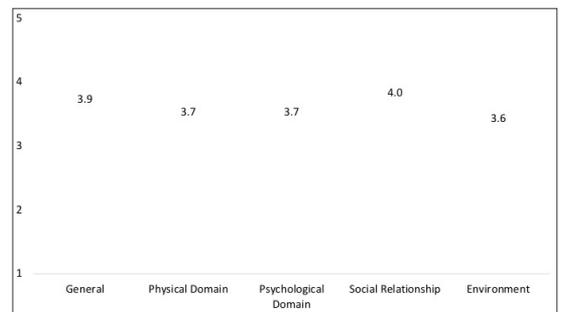
For interpretation of the WHOQOL-bref questionnaire, the results are presented on a growing Likert scale. In it the result of lower value represents a worse quality of life and the result of higher value represents a better quality of life.

Likewise, the classification of the results from the QWLQ-bref questionnaire is presented using a Likert scale. On this scale the lower value result represents a worse quality of life at work and the result of higher value represents a better quality of life. In addition, the total QWLQ result can be interpreted according to Table 1.

For both questionnaires we used the mean values of the collaborators for the interpretation.

Graph 1 shows the WHOQOL-bref results.

In WHOQOL-bref, it is observed that the best results refer to the domain of social relations, drawing attention to the results of the environmental domain that are worse. Likewise, the study by Medeiros (2012) evaluated the quality of life in 49 health professionals



Graph 1. WHOQOL-bref average results by domains. Source: Authors (2014).

of Alegrete/RS City Hall. He also found the highest levels of quality of life in the social relations domain, followed by the physical domain, and the lowest levels in the environmental domain, as found in the present study.

Another study, carried out by Braga et al. (2011), with a larger number of evaluations, totaling 133, also found the social domain as the highest levels of satisfaction. On the other hand, the environmental domain presented with lower levels concomitant to our study. In the validation study of the WHOQOL questionnaire for the Portuguese language, Fleck et al. (1999) observed that there is an important and significant correlation among all domains. These

domains are fundamental parts and complement each other to define the total level of quality of life. For this reason, it is important to observe the less expressive domains and to work on actions for them, thinking of improving the total level of satisfaction as for the quality of life.

Graph 2 demonstrates the results of QWLQ-bref.

In the graph the total result of the questionnaire that had an average of 73.61 does not appear. According to the interpretation table, there are satisfactory results in total. Results similar to these were found by Pereira (2012) who studied the relationship of leadership style and quality of life at work. He found a general average of 66.31, also satisfactory. Likewise, Medeiros (2012), who evaluated health professionals, found a general average of 69.21, a result quite similar to ours and that also constitutes a satisfactory quality of life at work.

When analyzing domains, averages are interpreted so that the best results are the closest to five. We call attention to the psychological domain that in this case presents the lowest results. In Pereira's (2012) research, the lowest domain was the professional followed by the psychological. Similarly in the study of Medeiros (2012), he also found the professional domain as the lowest. In our study, although the psychological domain presented inferior results, all domains present very close results.

Pereira (2012) also discusses in his study the importance of each of these domains and all correlations inherent to work satisfaction. The psychological domain, which in our study was the lowest, addresses the issues of motivation with work and satisfaction with the functions performed.

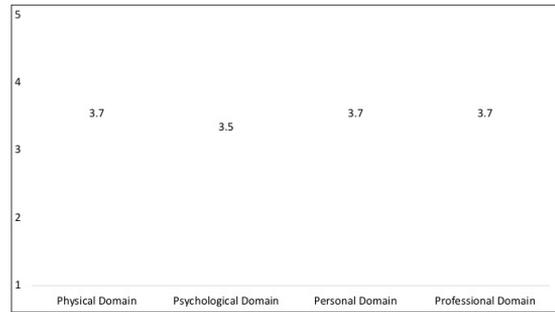
In this sense it is worth mentioning a research carried out by Landsbergis et al. (1999) who studied the effects of lean production on quality of life at work. They observed that although employees reported higher levels of stress and tension, in companies where lean production is already inserted, they identify themselves with greater autonomy and satisfaction with work.

To corroborate this, Lewchuk et al. (2001) also evaluated the impact of lean production on quality of life at work. They identified that this is not affected or there is no significant difference among companies that use lean production or not. Hence the importance of further research in this regard.

## 5 Final considerations

The objective of this research was, under the principles of lean production, to identify how the quality of life and quality of life evaluations in the work of the employees of the sector of student assistance of a CIHE comport themselves.

This research presents the presentation of a proposal for improvement in the student service sector, through the tools and principles of lean production. Among



**Graph 2.** Average results of QWLQ-bref by domains. Source: Authors (2014).

the improvements it is proposed to implement a new password system. This may give subsidies for observation of results and performance of the sectors. In addition, thinking about the elimination of losses, some measures like printing delivery by the financial sector, avoiding the return of the student to the protocol sector when making a request are also necessary.

These improvements were presented to the leaders and gave rise to the future MFV. Up to the end of this article, these improvements could not be implemented due to the operationalization of the sector itself. The researchers made themselves available for any clarification when, in an opportune time, leaders decide to implement the changes.

As a continuation of the research, based on the effectiveness of the proposed improvements, it is suggested to monitor the impact on quality of life and quality of life at work.

## References

- Braga, M. C. P., Casella, M. A., Campos, M. L. N., & Paiva, S. P. (2011). Qualidade de vida medida pelo Whoqol-Bref: estudo com idosos residentes em Juiz de Fora/MG. *Revista de APS*, 14(1), 93-100.
- Brasil. (2013, 12 de novembro). *Lei nº 12.881, de 12 de novembro de 2013. Dispõe sobre a definição, qualificação, prerrogativas e finalidades das Instituições Comunitárias de Educação Superior - ICES, disciplina o Termo de Parceria e dá outras providências*. Brasília, DF: Diário Oficial da República Federativa do Brasil.
- Cardoso, J. (2013). Aplicando o pensamento *lean* na assistência à saúde. In Joint Commission Resources (Ed.), *O pensamento lean na saúde: menos desperdício e filas e mais qualidade e segurança para o paciente*. Porto Alegre: Bookman.
- Cheremeta, M., Pedroso, B., Pilatti, L. A., & Kovaleski, J. L. (2011). Construção da versão abreviada do QWLQ-78: um instrumento de avaliação da qualidade de vida no trabalho. *Revista Brasileira de Qualidade de Vida*, 3(1), 1-15. <http://dx.doi.org/10.3895/S2175-08582011000100001>.

- Dennis, P. (2008). *Produção lean simplificada* (R. A. N. Garcia, Trad.). Porto Alegre: Bookman.
- Fleck, M. P. A., Lousada, S., Xavier, M., Chachamovich, E., Vieira, G., Santos, L., & Pinzon, V. (1999). Aplicação da versão em português do instrumento de avaliação de qualidade de vida da Organização Mundial da Saúde (WHOQOL-100). *Revista de Saúde Pública*, 33(2), 198-205. <http://dx.doi.org/10.1590/S0034-89101999000200012>. PMID:10413938.
- Fleck, M. P., Louzada, S., Xavier, M., Chachamovich, E., Vieira, G., Santos, L., & Pinzon, V. (2000). Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida "WHOQOL-bref". *Revista de Saude Publica*, 34(2), 178-183. <http://dx.doi.org/10.1590/S0034-89102000000200012>. PMID:10881154.
- Fundação Nacional da Qualidade – FNQ. (2014). Retrieved in 2014, June 28, from <http://www.fnq.org.br/>
- Glaser-Segura, D. A., Peinado, J., & Graeml, A. R. (2011). Fatores influenciadores do sucesso da adoção da produção enxuta: uma análise da indústria de três países de economia emergente. *Revista ADM*, 46(4), 423-436. <http://dx.doi.org/10.5700/rausp1021>.
- Greef, A. C., Freitas, M. C. D., & Romanel, F. B. (2012). *Lean Office: operação, gerenciamento e tecnologias*. São Paulo: Editora Atlas.
- Hofacker, A., Santos, A., & Santos, A. P. L. (2012). A critical view of the German procurement process in the sector. *Ambiente Construído*, 12(3), 45-56. <http://dx.doi.org/10.1590/S1678-86212012000300004>.
- Jones, D., Womack, J. (2011). *Enxergando o todo*. São Paulo: Lean Institute Brasil. Versão 1.1, maio.
- Lages, S. R. C. (2008). A saúde do trabalhador frente aos processos de reestruturação produtiva. *Estação Científica Online*, 5, 1-9.
- Landsbergis, P. A., Cahill, J., & Schnall, P. (1999). The impact of lean production and related new systems of work organization on worker health. *Journal of Occupational Health Psychology*, 4(2), 108-130. <http://dx.doi.org/10.1037/1076-8998.4.2.108>. PMID:10212864.
- Lewchuk, W., Stewart, P., & Yates, C. (2001). Quality of working life in the automobile industry: a Canada-UK comparative study. *New Technology, Work and Employment*, 16(2), 72-87. <http://dx.doi.org/10.1111/1468-005X.00078>.
- Liker, J. K. (2006). *O modelo Toyota: 14 princípios de gestão do maior fabricante do mundo* (L. B. Ribeiro, Trad.). Porto Alegre: Bookman.
- Liker, J. K., & Hoseus, M. (2009). *A cultura Toyota: a alma do modelo Toyota*. Porto Alegre: Bookman.
- Limongi-França, A. C. (2008). *Qualidade de Vida no Trabalho (QVT): conceitos e práticas nas empresas da sociedade pós-industrial*. São Paulo: Atlas.
- Medeiros, C. H. (2012). *Qualidade de vida dos profissionais do Sistema Único de Saúde (SUS) da prefeitura municipal de Alegrete/RS* (Trabalho de conclusão de curso). Universidade Federal do Rio Grande do Sul, Porto Alegre.
- Odebrech, T. A. C., & Pedroso, R. (2010). Qualidade de Vida no Trabalho: diferentes percepções de um mesmo processo. *Revista Olhar Científico*, 1(1), 134-153.
- Ogata, A., & Simurro, S. (2009). *Guia prático de qualidade de vida: como planejar e gerenciar o melhor programa para a sua empresa*. Rio de Janeiro: Elsevier.
- Organização Mundial da Saúde – OMS. (1995). *Publicações da OMS*. Retrieved in 2014, June 28, from <http://www.who.int/eportuguese/publications/pt/>
- Pereira, A. P. (2012). *Liderança e qualidade de vida no trabalho: um estudo sobre a percepção de colaboradores em organizações empresariais* (Dissertação de mestrado). Centro Universitário das Faculdades Associadas de Ensino, São Paulo.
- Pergher, I., Rodrigues, L. H., & Lacerd, D. P. (2011). Discussão teórica sobre o conceito de perdas do Sistema Toyota de Produção: inserindo a lógica do ganho da Teoria das Restrições. *Gestão & Produção*, 18(4), 673-686. <http://dx.doi.org/10.1590/S0104-530X2011000400001>.
- Pontes, S. K. (2006). *Produção enxuta e saúde do trabalhador: um estudo de caso* (Dissertação de mestrado). Universidade Federal de São Carlos, São Carlos.
- Roman, D. J., Marchi, J. J., Forcellini, F. A., & Erdmann, R. H. (2013). *Lean Service: aplicação do mapeamento do fluxo de valor em uma organização de serviços*. *Revista Gestão Industrial*, 9(4), 868-888.
- Rother, M., Shook, J. (1999). *Aprendendo a enxergar*. São Paulo: Lean Institute Brasil. Versão 1.2, junho.
- Saurin, T. A., & Ferreira, C. F. (2008). Diretrizes para avaliação dos impactos da produção enxuta sobre as condições de trabalho. *Revista Produção*, 18(3), 508-522. <http://dx.doi.org/10.1590/S0103-65132008000300008>.
- Yin, R. K. (2010). *Estudo de caso: planejamento e métodos*. Porto Alegre: Bookman.
- Zanchet, T., Saurin, T. A., & Missel, E. C. (2007). Aplicação do mapeamento de fluxo de valor em um centro de material e esterilização de um complexo hospitalar. In *Anais da VII Semana de Engenharia de Produção Sul-Americana (SEPROSUL)* (pp. 1-21). Salto, Uruguai: UDELAR.