

THE RELATIONSHIP BETWEEN LEARNING ORIENTATION AND INNOVATION

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Abstract:

There has been a growing interest for the learning process in the organizational context, stimulated by the perception that learning and innovation are essential for survival in competitive and dynamic environments. In spite of the number of specific publications on innovation and organizational learning, there is still an empirical gap in combining the issues together. This article investigates the relationship between innovation and organizational learning, considering the construct of learning orientation and its three dimensions: (i) commitment to learning; (ii) shared vision; and (iii) open-mindedness. A theoretical model describing the hypothetical relationships among these constructs was developed and tested using the structural equation modeling technique. The research was applied in the Brazilian Electro-Electronic Industry. Results show an appropriate adjustment of the investigated structural model, which indicates an influence of the learning orientation over the products innovation, and possibly over the competitive advantage in companies involved in learning processes. The results mainly show that the open-mindedness dimension has a stronger relationship with innovation. It indicates that an open-mindedness attitude, associated to the unlearning concept, stimulates the creation of new products and discontinuity of market standards.

Keywords: learning orientation, product innovation, commitment to learning, shared vision, open-mindedness, competitive advantage.

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1. Introduction

During the past two decades has been observed an increasing interest in the process of learning within the organizational context, encouraged by the belief that learning and innovation are essential to survive in competitive and dynamic environments (Lipshitz, Popper & Oz, 1996). The resulting interest is a comprehensive literature about the several dimensions of Organizational Learning and Learning Organization (Argyris & Schön, 1978; Shrivastava, 1983; Fiol & Lyles, 1985; De Geus, 1988; Levitt & March, 1988; Stata, 1989; Senge, 1990; Huber, 1991; Schein, 1993; Garvin, 1993; Kolb, 1997; Nonaka, 1997).

Besides the growing popularity of the subject of learning within organizations, authors on this field present little consensus in terms of its definition, operationalization and methodology (Huber, 1991; Garvin, 1993; Lipshitz, Popper & Oz, 1996; Popper and Lipshitz, 2000). That lack of convergence is partially due to the fact that distinct investigators have applied the concept or terminology of learning within the organization to different fields (Crossan, Lane & White, 1999). Most of the literature on the subject is rather fragmented and approaches it at distinct levels of abstraction (Popper & Lipshitz, 2000).

Several authors, however, have agreed that organizations should have the ability to engage in organizational learning processes – called learning orientation – to reach long-term competitive advantage, by encouraging innovation, particularly within dynamic and competitive environments (Slater & Narver, 1995; Dickson, 1996; Hurley & Hult, 1998; Baker & Sinkula, 1999a; Farrell, 2000).

Despite the number of specific publications on learning orientation, there is a lack of empirical corroboration of the relationship between learning orientation and innovation (Farrell, 1999; Baker & Sinkula, 1999a). Therefore, this article presents the details of a study aimed to empirically investigate that relationship, considering the construct of learning orientation and its three dimensions: (i) commitment to learning; (ii) shared vision; and (iii) open-mindedness (Baker & Sinkula, 1999a). The study has been limited to the Brazilian Electro-Electronic Industry. The results of the academic and managerial implications will be discussed along the text.

2. Theoretical References

In spite of the absence of consensus also existing on the types or basic levels of learning, there is a certain convergence in the literature (see Figure 1), or at least in the frequency with which the types of learning defined by Argyris & Schön (1978) are mentioned, namely: single-loop learning, double-loop learning and *deutero* learning (also referred by Argyris & Schön as triple-loop learning).

To Argyris & Schön (1978), single-loop learning is related to the effectiveness to reach existing objectives, and how to better keep the organization's performance, considering the existing rules. That is, single-loop learning is the simple behavior adjustment, respecting the organization's current principles.

Probst & Buchel (1997) call single-loop learning as adaptive, since it is through that process that the company adapts to its environment. According to the authors, organization members are capable of identifying problems in their environment, developing strategies to deal

with them and implementing those strategies. The adaptive learning premise, however, is that the organization reacts to environmental event by correcting mistakes of in-use-theories, keeping them in line with the existing rules. "This means that the organization adjusts to environmental factors, but existing norms and values are not questioned" (Probst & Buchel, 1997, p. 33).

Slater & Narver (1995) point out that these organization's stance is usually sequential and incremental, focusing on market opportunities that are essentially linked to the traditional scope of their activities. In that case, the results are usually incremental advances (Argyris & Schön, 1978).

According to Eskildsen, Dahlgard & Norgaard (1999), in single-loop learning, decisions are based only on observation, with little reflection. In this regard, Senge (1990) sustains that several good ideas generated at organizations are not carried on, since they usually confront established mental models. That denotes little intensity or willingness for revising current mental models.

	Single-loop learning	Double-loop learning	Deutero learning
Argyris & Schön (1978)	Single-loop learning	Double-loop learning	Deutero learning
Bateson (1981)	Type I learning	Type II learning	Deutero learning
Hedberg (1981)a	Adjustment learning	Turnover learning	Turnaround learning
Shrivastava (1983)	Adaptation	Assumption sharing	Development of knowledge base
Fiol & Lyles (1985)	Lower-level learning	Higher-level learning	
Pautzke (1989)a	Raising effectiveness	Learning from experience	Change in knowledge structures
Senge (1990)	Adaptive learning	Generative learning	
Garratt (1990)a	Operational learning circle	Policy learning circle	Integrated learning circle
Klixnecki et al. (1991)a	Improvement learning	Change learning	Learning to learn
Sattelberger (1991)a	Organizational change	Organizational development	Organizational transformation
Staehle (1991)a	Assimilation	Accommodation	Equilibration
Pawlowsky (1992)a	Idiosyncratic adaptation	Adaptation to environment	Learning to solve problems
Morgan (1996)	Single-loop	Double-loop	Holographic learn.
Probst & Buchel (1997)	Adaptive	Reconstructive	Process

Source: adapted from Probst & Buchel (1997)

Note: References in the table marked by a are apud Probst & Buchel (1997).

Figure 1 – References to the Types of Learning in Organizations

In fact, that is the assumption involved in the double-loop learning process. In this type of learning, before an action, prior results are corrected based on an analysis of the system's basic principles. Double-loop learning involves the critical review of in-use-theory, by questioning current principles and rules, which are properly altered (Argyris & Schön, 1978). To Bateson (1981), double-loop learning (which he calls Type II) changes the organization's knowledge and competence base through collective analysis of the problems, development of

new paradigms, and shared mental models, as well as the change in dominant rules, policies and objectives.

Double-loop learning, which Probst & Buchel (1997, p.35) called "reconstructive", is defined by the authors as the "process of questioning organizational norms and values, and building a new frame of reference". In this definition, challenging the existing reference model means re-evaluating its hypothesis and, supposedly, changing its rules and values.

Senge (1990) links double-loop learning to creation or innovation while single-loop learning is related to copying. The former, according to the author, differently from single-loop learning, requires new ways to face the world. To Senge (1990), double-loop learning happens essentially by revising established mental models, allowing for the generation of innovative behaviours and actions.

To Morgan (1996), double-loop learning distinguishes itself from the single-loop type because it involves challenging the adequacy of the current process' rules of functioning. There is a clear emphasis on sharing interpretation of information, which main characteristic is that of challenging general rules and norms that govern activities and behaviors within the organization.

The *deutero* learning is defined by Probst & Buchel (1997) as the ability of learning how to learn, consisting of gaining insights over the learning process. In other words, *deutero* learning means understanding single-loop learning and double-loop learning in order to increment them. The core element in this type of learning is therefore the increment of the ability to learn, that is, the subject of learning is learning itself. To Probst & Buchel (1997), when an organization "learns how to learn", its internal relations are seen in a clearer way and that reinforces its transformation. If the organization's members are able to reflect and "learn how to learn", conflicts are most likely to be foreseen, their consequences can be assessed and opportunities for internal correction can be seized. Therefore, this type of learning is associated to factors that allow understanding and the resulting facilitation of learning, that is, the creation and use of knowledge through understanding its own meaning for the organization (Probst & Buchel, 1997).

Bateson (1981) sustains that, at this level of learning, organization members try to find out how they and their predecessors facilitated or inhibited the learning process, aiming at generating new learning structures and strategies.

In this type of learning, changes in the referential model are highly important. The success of *deutero* learning and the restructuring of values and rules can be assessed by the level of acceptance of change within the organization. Evidently, in order for that to take place, organization members have to be provided with the conditions necessary for learning. That includes the opportunity for communication, interaction and analysis, as well as the creation of transparency, allowing the generation of shared reference models (Probst & Buchel, 1997).

Argyris & Schön (1978) stress, however, that this type of learning requires revising individual stances regarding "learning how to learn" new things. Hult (1998) reinforces that idea, sustaining that new learning abilities are necessary, as well as an organizational atmosphere that favors their development, in order for the organization to be able to carry out *deutero* learning. The intensity of the referred atmosphere for *deutero* learning is related to what Hult (1998) calls the degree of learning orientation existing within the organization. Learning orientation, therefore, defines the importance or acknowledgement given by the organization to the process of organizational learning (Hult, 1998). Thus, learning orientation is seen as a characteristic that influences each of the process of organizational learning (Dibella & Nevis, 1999).

Sinkula, Baker and Noordewier (1997) relate three organizational values normally associated to the willingness of the company to learn: commitment to learning; open mindedness; and shared vision. To the authors, companies that have a commitment to learning

value the need to understand the causes and consequences of their actions, allowing for the detection and correction of errors in the theory-in-use. Open-mindedness is associated to the concept of unlearning, through which the company proactively questions even its older routines, assertions and company beliefs, dismissing or replacing outdated knowledge.

Shared vision, in turn, differs from commitment to learning and open-mindedness as it influences the direction of learning, while the other two values influence its intensity (Sinkula, Baker & Noordewier, 1997). Sharing the organization's purposes and objectives among its members provides the focus for learning, promoting effort, commitment and purposes among them (Day, 1994a). The lack of commitment and understanding of the direction the organization is taking compromises learning motivation (Sinkula, Baker & Noordewier, 1997). To Slater & Narver (1995, P.70), "a robust vision enables the organization to learn and adapt".

Learning orientation, in itself, is seen as a "set of values and practices that reflects where learning occurs and the nature of what was learned" (Nevis, DiBella & Gould, 1995, p. 76). To Baker & Sinkula (1999a, p. 413), learning orientation is "a set of values that influence the degree to which an organization is satisfied with its theories in use". Therefore, companies with a high level of learning orientation encourage their staff, or even demand from them, the permanent challenging to the organization rules that guide their market information processing and organizational actions. So, it is the learning orientation that directly affects the ability to challenge old assertions or "truths" about the market and how the company should be organized to deal with them, promoting innovation based on new paradigms (Day, 1994; Claycomb & Germain, 1997; Hurley & Hult, 1998; Baker & Sinkula, 1999a).

Following this stream, Baker & Sinkula (1999b) – openly influenced by works of Han, Kim & Srivastava (1998), and Hurley & Hult (1998) – introduced the innovation construct into the model tested by their previous study (Baker & Sinkula, 1999a). In the discussion about the results of their study, Baker and Sinkula (1999b, p.14) sustain that learning orientation is a "key to successful innovation-driven performance", that is, learning orientation directly influences business performance through their direct effect upon innovation.

Baker & Sinkula's (1999b) model was taken as the basis for the model tested in the present study. That choice occurred in face of the relative stability that the theoretical model proposed by Baker and Sinkula (1999b) has received in the literature, besides the methodological strength seen in its development process (Sinkula, 1994; Sinkula, Baker & Noordewier, 1997; Baker & Sinkula, 1999a; Baker & Sinkula, 1999b). Nevertheless, the adapted model (Figure 2) was developed considering a "partial disaggregation" strategy, following Bagozzi & Edwards' (1998) recommendations, in order to test the influence of each dimension of learning organization on product innovation. It means that learning orientation was not modelled like a second order construct. In fact, each one of the learning orientation dimensions (commitment to learning, open mindedness, and shared vision) was modelled with direct impact on product innovation. Note the imposed covariances established between the three independent variables.

The model was tested as described next.

3. Method

The method applied to this research, given its descriptive nature, was the cross-sectional survey following recommendations by Churchill (1999) and Malhotra (2001). The technique used to evaluate the proposed model was confirmatory factorial analysis (CFA), by applying structural equations modeling (SEM) (Hoyle, 1995; Hair et al., 1998) with the software AMOS[®]. The procedure was based on data collected in a survey on the Electro-Electronic industry, using a data collection instrument adapted from Baker & Sinkula (1999b).

Learning orientation was measured by the scale proposed by Sinkula, Baker & Noordewier (1997), revised by Baker & Sinkula (1999a) and applied in Baker & Sinkula (1999b), which involved three dimensions: commitment to learning; shared vision; and open-mindedness (see Appendix A). It was applied a 5-points Likert scale.

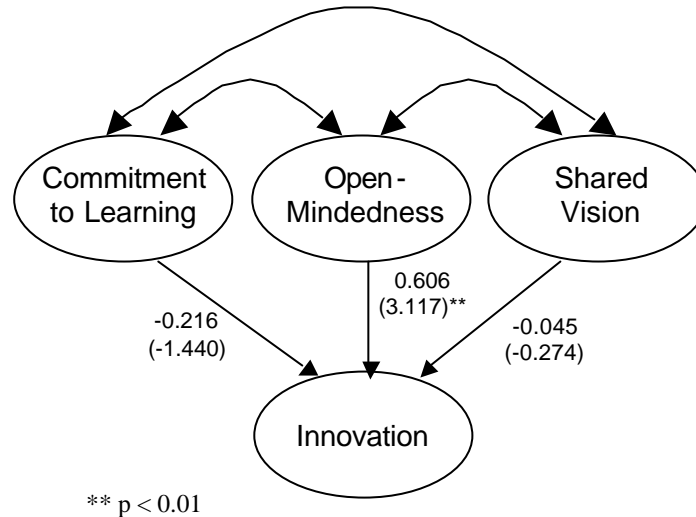


Figure 2 – Proposed Model

In order to measure the degree of innovation, the construct suggested by Baker & Sinkula (1999b) was adopted. According to the authors, the innovation construct is composed of four variables related to: market pioneering; the degree of new product differentiation; the rate of new product introduction; and the degree of success of new products. These variables were measured by a 5-points scale, from 1 – much larger than the main competitor to 5 – much smaller than the main competitor.

The original scales (see Appendix A) were converted to the Portuguese language through the technique of reverse translation [Dillon, Madden and Firtle, 1994]. The validation of the contents was done through the method of judges, academics and practitioners [Malhotra, 2001]. The judges, two marketing professors from the Graduate Program of Administration (PPGA) of the Federal University of Rio Grande do Sul (UFRGS), considered the scale appropriate. After that, the research instrument was submitted to a pre-tested. Complementarily, as indicated by Hair et al. (1998) and Garver & Mentzer (1999), the evaluation of the instrument was carried out by reliability calculation and variance extracted, from the sum of the loadings of the standard variations and measurements errors of the variables. All constructs under analysis presented internal consistence.

The survey applied to the Electro-Electronic industry considered the population of companies in the sector which are affiliated to the Brazilian Association of Electrical and Electronic Industries (ABINEE), totalling 541 organizations.

Data collection from Electro-Electronic industry was carried out by regular mail, in the end of 2001. The questionnaire was sent to every member of their respective populations. The final number of valid questionnaires – excluded the cases of outliers, wrong addresses, mistakes in filling up the forms or incomplete questionnaires – was **170** cases.

Because of the chosen data collection method – questionnaire via regular mail – non-respondent bias analysis was carried out on the sample, by two-wave test (1st wave after sending the questionnaire and 2nd wave after the follow-up) and comparison between characteristics of

respondent and non-respondent companies (data regarding number of employees, geographic location and classification according to activity code). Results obtained by both procedures indicated inexistence of bias on the data collected.

4. Result Analysis and Discussion

As postulated by Hoyle (1995) & Hair et al. (1998), the application of CFA was preceded by an evaluation of the correlation between the constructs of the model, in order to identify possible fragility of the relationships theoretically hypothesized. The analysis of the correlation (Table 1) between the several indicators showed that there is a significant correlation between the constructs in the model.

Table 1 - Correlation Between the Constructs

	Commitment to Shared Vision Learning	Open-Mindedness
Shared Vision	0,661**	
Open-Mindedness	0,651**	0,604**
Innovation	0,217**	0,234**

** p < 0,001

These results could be seen, at first, as favouring a conclusion for the validity of the model, as in the study carried out by Baker & Sinkula (1999b). On the other hand, it may also be considered that the results point to a possible fragility of the model under analysis, signalling a stronger relationship between open-mindedness and innovation rather than commitment to learning and innovation; and shared vision and innovation. Such a perception has evidenced the need to apply a more accurate statistical technique, as is the case of CFA.

The examination of the properties related to the validity of the constructs, namely, unidimensionality, reliability, convergent validity and discriminant validity, followed recommendations by Garver & Mentzer (1999). All constructs demonstrated construct validity.

The results of CFA presented good fit rates ($\chi^2 = 303.53$; $DF = 180$; $GFI = 0.857$; $AGFI = 0.817$; $TLI = 0.938$; $CFI = 0.947$; $RMSEA = 0.063$), according to standards suggested by Hair et al. (1998), thus demonstrating the good fit of the theoretical model.

After confirming the model fit, it was possible to proceed reading the estimated parameters for the direct-effect relationships hypothesized in the theoretical model. Table 2 relates the parameters under discussion. Note that the relationship between open-mindedness and innovation was positive and significant ($p < 0.01$), recording high factorial loading. The other two relationships (shared vision >> innovation; commitment to learning >> innovation) were not significant ($p > 0.01$), besides recording negative factorial loadings, contrary to what was hypothesized by the proposed model (Figure 2).

Table 2 – Estimated Parameters of Model

Relationship	Loading (<i>t-value</i>)
commitment to learning >> innovation	-0.216 (-1.440)
shared vision >> innovation	-0.045 (-0.274)
Open-mindedness >> innovation	0.606 (3.117)**

Note: all covariances between independent variables were significant ($p < 0.01$).

** p < 0.01

In other words, the analysis of the factorial loadings points to open-mindedness's direct, strong and positive influence on innovation. On the other hand, the same analysis shows a non-significant influence of commitment to learning and share vision on innovation in the Brazil's Electro-Electronic industry.

5. Conclusions

A series of works discusses the need for organizations to emphasize continuous-learning processes in order to sustain a distinctive and lasting position within the competitive environment. Therefore, this work related the propositions and conclusions of other works regarding learning orientation and product innovation.

The data analysis presented a direct, strong and positive influence of open-mindedness on innovation, and a non-significant and negative effect of the other two dimensions of learning orientation on innovation. These results slightly differ from the results found by Baker & Sinkula (1999a). The authors arrived at positive and significant relationships of learning orientation, as a whole, to innovation. Results were also partially in contrast to the assessment made by Claycomb & Germain (1997), to whom learning orientation exerts a positive influence on innovation.

A possible explanation for these results was pointed out by Perin (2002), to whom the open-mindedness construct is described in the literature as closely linked to the concept of unlearning (Sinkula, Baker & Noordwier, 1997; Baker & Sinkula, 1999a), that is, the ability of the organization to dispose of obsolete knowledge, thus opening space for new learning (Huber, 1991; Sinkula, Baker & Noordwier, 1997; Baker & Sinkula, 1999a). The process of unlearning, in turn, is seen in literature on innovativeness as one of its strongest requirements. Lei, Slocum & Pitts (1999, p.26) sustain that "developing a [organizational] design that can concurrently harness innovation, initiative, and competence-building is a difficult task that often requires significant 'unlearning' of previous organizational practices". Sivadas & Dwyer (2000, p. 35), after examining organizational factors that influence the success of new products, corroborate that instance, arguing that "radical innovations require participants to engage in more learning and 'unlearning' to develop new capabilities". Finally, it should be underlined Bhatt's (2000) assertion that the replacement of old knowledge by new knowledge is necessary for the permanent improvement and breakthrough innovation.

It must be emphasized that organizational learning starts by individual learning (Nonaka, 1997). Therefore, leaders of an organization that intends to be a learning organization should be able to create an environment in which questioning current "truths" is the norm and challenging the status quo is expected (Senge, 1990; Slater & Narver, 2000). Such a stance should be developed by leaders in challenging their own mental models, encouraging workers to do the same, encouraging attitudes that jettison outdated knowledge (unlearning), specially if we consider the ability of learning faster than competitors as the only sustainable competitive advantage (DeGeus, 1988). However, Powell, Koput and Smith-Doerr (1996) argue that when the knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed, the locus of innovation will be found in networks of learning, rather than in individual firms.

Therefore, it seems reasonable to argue that an organization should encourage an open-minded stance in its staff, valuing the initiative of breaking up current paradigms within the organization.

In spite of the scientific rigor applied to this research, some methodological and conceptual limitations should be noted for the proper understanding of results hereby expressed

and consequently considering its implications. Some solutions for those limitations and possible extensions of the work in the form of new research should also be postulated.

The confirmatory results presented and discussed here concerning the relations between the constructs of the proposed model should be considered only as evidence of causal relations between the aforementioned constructs. The effective proof of causality could be carried out by new studies with the same research question but with alternative methods.

As for the type of research employed in this study, it is pointed out that cross-sectional survey itself provides a series of limitations to the study, the most important being the impossibility of controlling the variable of time and its influence on constructs and their interrelations. In this case, respondents are obliged to consider past factual reality, which can promote response bias generated by several factors, such as loss of memory (Churchill, 1999). The simultaneous – and usually by the same tool – measurement of all constructs should also be underlined. That procedure can lead to a wrong interpretation of a correlation as being causality. Thus, longitudinal survey-based research designs might be more adequate to verifying causality in the relations between constructs (Sinkula, 1994).

Finally, regarding data collection, note the adoption of only one respondent per organization included in the sample, which might have promoted a wrong consideration of an individual opinion as the expression of the reality of a company. Despite all the methodological care taken by sending the questionnaire to high management, representative position-holding people within the researched organizations, as well as the empirical indication of the non-difference between single and multiple respondents (Joworski & Kohli, 1993; Homburg, Workman & Krohmer, 1999; Pelham, 2000), it would be interesting to compare results obtained in this study with results from studies involving multiple respondents in each organizations.

6. References

- Argyris, C. (1977). Double Loop Learning in Organization. *Harvard Business Review*, 55(5), 115-125.
- Bagozzi, R. P., & Edwards, J. R. (1998). A general approach for representing constructs in organizational research. *Organizational Research Methods*, 1(1), 45-87.
- Baker, J. M., & Sinkula, W. E. (1999a). The synergetic effect of Market Orientation and learning orientation on Organizational Performance. *Journal of the Academy of Marketing Science*, 27(4), 411-27.
- Baker, J. M., & Sinkula, W. E. (1999b). learning orientation, Market Orientation, and innovation: Integrating and Extending Models of Organizational performance. *Journal of Market-Focused Management*, 4(4), 295-308.
- Caruana, A., Ramaseshan, B., & Ewing, M. (1996). Market orientation and performance: a study of Australasian universities. *Curtin Business School*, Working Paper Series.
- Churchill Jr., G. A. (1999). *Marketing Research: Methodological Foundations*. (7th ed.). Orlando: The Dryden Press, 1999.
- Claycomb, C., & Germain, R. (1997). Organizational Learning and Performance: an Empirical Test. In *Proceedings of American Marketing Association Winter Educators' Conference* (pp. 94-100). St. Petersburg, FL: AMA.
- Day, G. S. (1994a). Continuous Learning About Markets. *California Management Review*, 36(4), 9-31.

- Day, G. S. (1994b). The Capabilities of Market-Driven Organizations. *Journal of Marketing*, 58(4), 37-52.
- Dickson, P. R. (1996). The static and dynamic mechanics of competition: a comment on Hunt and Morgan's Comparative Advantage Theory. *Journal of Marketing*, 60(3), 102-106.
- Dillon, William R., Thomas J. Madden, Neil H. Firtle (1994). *Marketing Research in a Marketing Environment*. St. Louis: Times Mirror.
- Faleiro, S. N. (2001). *A Relação entre Orientação para o Mercado, Orientação para a Aprendizagem e Inovação: o Caso dos Cursos de Graduação em Administração Filiados à ANGRAD*. Porto Alegre: Ed. UFRGS. (Thesis for Master's Degree). (in Portuguese).
- Farrell, M. A. (2000). Developing a Market-Oriented Learning Organisation. *Australian Journal of Management*, 25(2), 201-222.
- Garver, M. S., & Mentzer, J. T. (1999). Logistics research methods: employing structural equation modeling to test for construct validity. *Journal of Business Logistics*, 20(1), 33-57.
- Hair, J. F., Jr., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. (5th ed.). New Jersey: Prentice Hall.
- Han, J. K., Kim, N., & Srivastava, R. K. (1998). Market orientation and organizational performance: is innovation a missing link?. *Journal of Marketing*, 62(4), 30-45.
- Homburg, C., Workman, J. P., & Krohmer, H. (1999). Marketing's influence within the firm. *Journal of Marketing*, 63(2), 1-17.
- Hoyle, R. H. (1995). *Structural Equation Modeling: Concepts, Issues, and Applications*. London: SAGE.
- Hunt, S. D., & Morgan, R. M. (1996). The Resource-Advantage Theory of Competition: dynamics, path dependencies, and evolutionary dimensions. *Journal of Marketing*, 60(2), 107-114.
- Hurley, R. F., & Hult, G. T. M. (1998). innovation, market orientation, and organizational learning: an integration and empirical examination. *Journal of Marketing*, 62(3), 42-54.
- Kohli, A. K., Jaworski, B. J., & Kumar, A. (1993). Markor: A measure of Market Orientation. *Journal of Marketing Research*, 30(4), 467-477.
- Malhotra, N. K. (2001). *Pesquisa de Marketing: Uma Orientação Aplicada*. Porto Alegre: Bookman. (in Portuguese).
- Perin, M. G. (2002). *A Relação entre Orientação para Mercado, Aprendizagem Organizacional e Performance*. Porto Alegre: ed. UFRGS. (Thesis for Doctor's degree). (in Portuguese).
- Perin, M. G., & Sampaio, C. H. (2001). A Relação entre as Dimensões de Orientação para Mercado e a Performance. In *Proceedings of the 25th ENANPAD* (CD-Rom). Campinas, SP: ANPAD. (in Portuguese).
- Powell, W. W., Koput, K. W. & Smith-Doerr, Laurel. *Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology*. *Administrative Science Quarterly*, 41, 116-145, 1996.
- Sinkula, J. M. (1994). Market Information Processing and Organizational Learning. *Journal of Marketing*, 58(1), 35-45.
- Sinkula, J. M., Baker, W. E., & Noordewier, T. (1997). A Framework for Market-Based Organizational Learning: Linking Values, Knowledge and Behavior. *Journal of the Academy of Marketing Science*, 25(4), 305-318.

Slater, S. F., & Narver, J. C. (1995). Market Orientation and the Learning Organization. *Journal of Marketing*, 59(3), 63-74.

Slater, S. F.; Narver, J. C. (2000). Intelligence Generation and Superior Customer Value. *Journal of the Academy of Marketing Science*, 28(1), 120-127.

Appendix A

Commitment to learning (5-points Likert scale)

- Managers basically agree that our business unit's ability to learn is the key to our competitive advantage.
- The basic values of this business unit include learning as key to improvement.
- The sense around here is that employee learning is an investment, not an expense.
- Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.
- Our culture is one that does not make employee learning a top priority.
- The collective wisdom in this enterprise is that once we quit learning, we endanger our future.

Shared Vision (5-points Likert scale)

- There is a well-expressed concept of who we are and where we are going as a business unit.
- There is a total agreement on our business unit vision across all levels, functions, and divisions.
- All employees are committed to the goals of this business unit.
- Employees view themselves as partners in charting the direction of the business unit.
- Top leadership believes in sharing its vision for the business unit with the lower levels.
- We do not have a well-defined vision for the entire business unit.

Open-mindedness (5-points Likert scale)

- We are not afraid to reflect critically on the shared assumptions we have about the way we do business.
- Managers in this business unit do not want their "view of the world" to be questioned.
- Our business unit places a high value on open-mindedness.
- Managers encourage employees to "think outside of the box".
- An emphasis on constant innovation is not a part of our corporate culture.
- Original ideas are highly valued in this organization.

Innovation (5-points scale, from 1 – much larger than the main competitor to 5 – much smaller than the main competitor)

- Market pioneering.
- Degree of new product differentiation.
- Rate of new product introduction.
- Degree of success of new products