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Aude Lemullier, Frances Fortuin, Onno Omta, Loïc Sauvée

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Impact of R&D & Marketing integration on innovation and business performance in French food processing companies

Lemullier, A.B.

Institut Polytechnique LaSalle Beauvais, 19 rue Pierre Waguet, 60 026 Beauvais, France
Wageningen University, Hollandseweg 1, 6706 KN Wageningen, Holland
E-mail : aude.lemullier@live.fr

Fortuin, F.T.J.M.

Wageningen University, Hollandseweg 1, 6706 KN Wageningen, Holland
E-mail: frances.fortuin@wur.nl

Omta, S.W.F

Wageningen University, Hollandseweg 1, 6706 KN Wageningen, Holland
E-mail: onno.omta@wur.nl

Sauvée, L.

Institut Polytechnique LaSalle Beauvais, 19 rue Pierre Waguet, 60 026 Beauvais, France
E-mail : loic.sauvee@lasalle-beauvais.fr

Abstract: The globalization and the rapid changes of consumers' needs make the food industry turbulent. Companies have to become more market-oriented and to implement an adequate innovation strategy to respond to these changing needs. In management literature, cross functional integration, especially between R&D & Marketing, is thought to be crucial to achieve better market-oriented innovation and ultimately better business performance and success in the market place. It is the aim of this study to show the impact of integration barriers and mechanisms on R&D & Marketing integration and consequently on innovation and business performance. A questionnaire survey in 30 French food processing companies with more than 120 employees and 3 in-depth interviews with two R&D directors and one Marketing director were conducted in order to get specific insights in R&D & Marketing integration in French food processing companies.

R&D & Marketing integration positively impacts innovation and business performance in the participating French food processing companies. The quality of R&D & Marketing integration is impacted by integration barriers and mechanisms such as communication and cooperation, organizational structure (i.e. cross functional teams), the sharing of goals, formal integrative management processes, language, ICT (Information Communication Technology) tools, informal social systems (e.g. trips and group events) and well balanced incentives and rewards.

Keywords: R&D / Marketing / Integration / Innovation / Performance / French food processing companies

1. Introduction

According to the CIAA (Confédération des Industries Agro-Alimentaires de l'Union Européenne) review of key competitiveness indicators, the objective of the food-industry is to grant safe, nutritious, sustainable, healthy and affordable food and drinks to society (CIAA report, 2008). The French food processing industry is the first industry of the country with a turnover of €147billion in 2008 (Ministère de l'Agriculture, 2010). With an export value of €44 billion (against €38.5 billion of imports) France is the fourth exporter of food products in the world after the USA, The Netherlands and Germany

(Ania, 2010; Agreste, 2010). In terms of processed food products, France, first exporter for a long time, is now the fourth in the world after The Netherlands, Germany and USA (Ministère de l'Agriculture, 2010). In France, 10.568 French companies conduct their activities in the food processing industry, including 97% of firms with less than 250 employees and 73% of firms with less than 20 employees (Ania, 2010).

Since the 1970s, a lot of innovations in process, product, organization of production and distribution in the French food industry have occurred (Nicolas and Hy, 2000). According to a study of the Dutch Institute LEI (Landbouw Economisch Instituut), the competitiveness of European food industry is weak compared to the American or the Canadian one (Wijnands et al., 2006). The growth and competitiveness of food processing companies depend on their capacity to differ themselves from competitors. This differentiation is link to the capacity to innovate. By constructing "pôles de compétitivité" (competitiveness clusters) since 2005 in all its industries, France has a good advantage for competitiveness. The "pôles de compétitivité" of the food sector have as principal objective to create a local R&D's dynamic (Ministère de l'Agriculture, 2008).

Concerning agricultural and food markets, recent changes are observed. The most important one is the shift from production to market orientation (Omta and Folstar, 2005). Consumers' needs and wants concerning food are changing and the companies have to quickly adapt themselves to keep competitive advantages. One consequence is that innovation, as a primordial factor for business competition, is becoming crucial in agri-food marketing strategy. According to Matthyssens et al. (2008), value innovation, which is "a strategic approach to business growth", "can be achieved by implementing a focus on innovation and creation of new market possibilities" (www.qfinance.com, 2010) and is one of the fastest growing domains in the food industry. The implementation of an internal culture is one of the important management practices useful to achieve it. One of the most important factors of innovation success is R&D & Marketing integration (Fortuin and Omta, 2009; Griffin and Hauser, 1996; Kahn, 1996; Kahn and Mentzer, 1998; Kahn, 2001). Since the start of the century, European and/or worldwide centralizations of functions such as R&D, purchases, information systems and marketing are quickly developed among European multinational food processing companies (Palpacuer et al., 2005). These observations indicate that R&D & Marketing integration is an attractive variable to study.

Kahn (1996, p.139) defined interdepartmental integration as "a multidimensional process that subsumes interaction and collaboration". Interaction is the structural nature of the interdepartmental activities and is defined, for instance, in term of meetings, committees and phone conversations. Collaboration is the unstructured nature of cross-departmental relationships and represents the fact that departments have collective goals, mutual understanding and the same vision etc. Thus, interaction and collaboration are the two aspects positively influencing companies' performance (Griffin and Hauser, 1996; Kahn and McDonough, 1997; Leenders and Wierenga, 2002; Viaene and Januszewska, 1999; Monaert et al., 1994). By performance these researchers mean departmental performance, product development performance, product management performance and even satisfaction in working with others departments. Different barriers exist to achieve communication and cooperation between R&D & Marketing and mechanisms exist to overcome those barriers, to reach a better R&D & Marketing integration and ultimately to achieve better performance.

30 questionnaires, answered by both R&D & Marketing oriented managers of the French food processing industry, have been analyzed and 3 in-depth interviews have been conducted to:

1. Show the impact of R&D & Marketing integration on innovation and business performance in the French food processing industry.
2. Define and analyze the most important factors impacting R&D & Marketing integration in the French food processing industry.

This paper is structured as follow: Section 2 provides the theoretical backgrounds for the study and defines the most important concepts. Section 3 presents the conceptual model, its operationalization into a questionnaire and interview's questions as well as the methods of data collection. Section 4 describes the results of the study. In Section 5, the results are discussed and the main conclusions are stated.

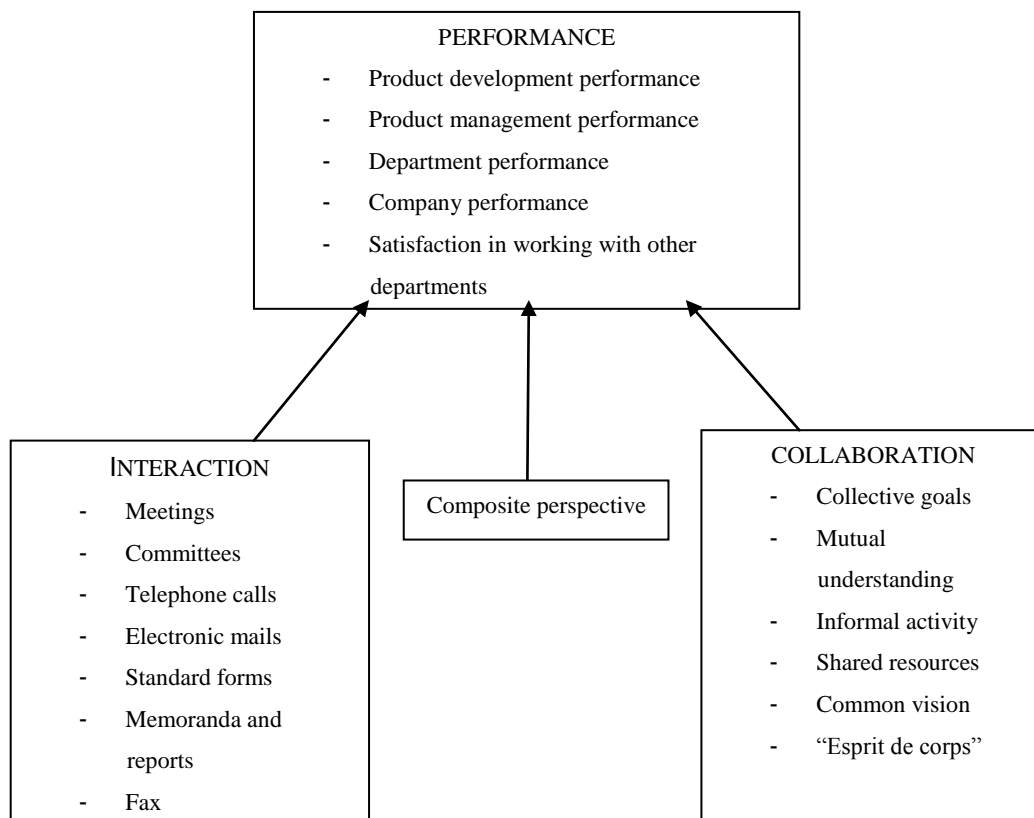
2. Theoretical background and study domain

Interdepartmental integration

Integration is defined as “the degree to which there is communication, collaboration and a cooperative relationship between R&D and marketing” (Leenders and Wierenga, 2002, p.306). Interdepartmental integration is described as a single dimensional concept or a multidimensional concept. First, the single dimensional view can be interaction-based (structured part of interdepartmental integration) or collaboration-based (unstructured nature of interdepartmental integration). Second, the multidimensional concept is mentioned when both interaction and collaboration are taken into account (Kahn, 1996). The composite view of integration reflects the distinct nature of interaction and collaboration (Kahn and Mentzer, 1998).

According to Kahn and Mentzer (1998), collaboration is the strongest factor and the most appreciate one to well managed R&D & Marketing integration and ultimately to achieve better performance. Interaction can also improve companies’ performance but too much interaction may be negative for companies. Kahn and Mentzer (1998) recommended to R&D & Marketing managers to focalize on collaboration to integrate the two functional areas. Figure 1 shows the impact of interaction and collaboration on companies’ performance.

Figure 1 : Influence of interaction and collaboration on performance (adapted from Kahn, 1996 and Kahn and Mentzer, 1998).



R&D & Marketing integration barriers

Different R&D & Marketing integration barriers exist in companies and often lead to communication, cooperation and collaboration problems. The main barriers presented in the management literature are stated below.

Language / Cultural through worlds: R&D & Marketing employees use different technical terms. Marketing employees talk about products benefits and positioning while R&D professionals talk about specifications and performance (Griffin and

Hauser, 1996). Training and background are often different between R&D & Marketing employees. The differences of culture inside firm's departments increase these barriers. Even if employees work for common goals, their interpretations of these goals can be different (Griffin and Hauser, 1996).

Organizational responsibilities: This barrier includes the difference of priorities and responsibilities of R&D & Marketing employees. When functional success measures are unsupportive of integration, difficulties appear between R&D & Marketing employees to communicate and cooperate (Griffin and Hauser, 1996).

Goal incongruity: This barrier is defined as "the extent to which members of marketing and R&D subscribe to different goals, use different decision criteria, and think differently about time" (Song and Song, 2010, p. 384).

Physical barriers: When R&D & Marketing departments are isolated it is harder for employees to communicate. The number of meetings, the quality of information transfer as well as the good problems' clarification decrease in the same way as the physical distance (Griffin and Hauser, 1996).

Communication barriers and cooperation: Communication barriers are created by the differences of properties between the two departments, the time pressure and the poor timing free for communication (Gupta et al., 1985).

Insensitivity to each other's capabilities and perspectives: Marketing managers point out the fact that R&D managers are not sensitive to marketing's perspectives and to the characteristics of the market environment (Gupta et al., 1985).

Lack of senior management support: In the study of Gupta et al. (1985), R&D & Marketing managers mentioned that senior management miss long run orientation and push too much in order to get near term profits. Another primordial problem is the promotion of marketing performance measures that obstruct successful R&D & Marketing integration (Gupta et al., 1985).

Lack of market knowledge: The lack of market knowledge such as knowledge of competition, customers and product appliance forms barriers to R&D & Marketing integration. Gupta and Wilemon (1988) affirmed that a problem of credibility-cooperation connection exist in high tech firms to integrate R&D & Marketing departments. R&D managers think that Marketing managers do not provide enough information (e.g. about customers requirements, test marketing results and competitors' strategy) and lack credibility (Gupta et al., 1985).

R&D & Marketing integration mechanisms

Some mechanisms can be implemented to facilitate R&D & Marketing integration. Those mechanisms are:

Relocation and physical facilities: According to Griffin and Hauser (1996), it is primordial to relocate the departments because R&D & Marketing integration is improved when the two departments are close to each other. It allows the improvement of communication and cooperation between employees as well as the achievement of a better market place success (Griffin and Hauser, 1996).

Personnel movement: It means that employees can move between different functions to reduce the probability of isolated thought worlds (Leenders and Wierenga, 2002). It allows the development of information flows between departments and enables a better understanding by bringing common language. Monaert et al. (1994) mentioned that job rotation increases interaction between employees and Griffin and Hauser (1996) stated that personnel movement increases marketplace success and decreases time to market. As this mechanism is difficult to achieve, firms sometimes ask the employees to have both R&D & Marketing competencies before to work in one of those departments. Temporary transfer is also a good solution for employees to obtain training in both areas.

Informal social systems and culture: The implementation of informal social systems enables open communication and provides contacts between employees. This mechanism helps to reduce language and cultural through worlds barriers as well as physical barriers by improving the communication, the utilization of information and the coordination and by reducing uncertainties (Griffin and Hauser, 1996). Informal networks can be implemented by organizing informal group events such as trips including employees of different functional areas (Leenders and Wierenga, 2002).

Organizational structure: The delegation of an "integrator" to manage a project is an important factor to improve communication and cooperation between employees (Griffin and Hauser, 1996). Another solution concerning organizational structure is the promotion of specific relationships between R&D & Marketing employees for each innovation project. Via

coordinating groups, matrix organizations and projects teams, both coordination and communication are increased (Griffin and Hauser, 1996). According to Leenders and Wierenga (2002), the structure the most appropriate for R&D & Marketing integration is the cross-functional project teams. Those teams support cooperation and information exchange and ultimately have a positive effect on integration (Leenders and Wierenga, 2002).

Incentives and rewards: According to Griffin and Hauser (1996), R&D & Marketing employees can get bonuses base on technology improvement for R&D employees and base on the increase of market share for Marketing employees for instance. This kind of rewards augments differentiation between R&D & Marketing employees. Interrelated rewards for R&D & Marketing employees base on product-development profits decrease organizational responsibilities barriers and increase profits. Moreover well balanced incentives and rewards lead to cross-functional decision-making and help to resolve conflicts between the two departments. Leenders and Wierenga (2002) mentioned that the different opportunities of remuneration and career have to be harmonized and identical for R&D & Marketing employees to improve integration. In opposite, Igarria et al. (1999) stated that R&D employees need specific mechanisms to drive motivation. Individual needs and personal competences should be taken into account when evaluating researchers (Debackere, 1997; Igarria, 1999). Then, incentives and rewards should be harmonized but also adapted to the employees' needs.

Formal integrative management processes: Griffin and Hauser (1996) announced that the objective of this mechanism is to specify to the employees what tasks have to be achieved, in what order and by whom. The implementation of interactive sessions between R&D & Marketing employees allows the exchange of information, the modification of personal value etc. By formally structuring decision-making processes between R&D & Marketing, harmony appears between them.

ICT (Information Communication Technology) tools: It helps to transfer information inside the companies. Leenders and Wierenga (2002) argued that ICT tools lead to a better R&D & Marketing integration and ultimately to better new products developments. ICT tools include different communication technologies such as e-mail, electronic bulletin board, video conferencing and also decision-aiding technologies such as expert systems and executive information systems (Song and Song, 2010). According to Song and Song (2010), ICT tools help to reduce the negative impact of physical distance, goal incongruity and cultural barriers on R&D & Marketing integration.

3. Conceptual model, questionnaire construction and data collection

Conceptual model and questionnaire construction

Figure 2 shows the way in which we expect integration barriers and mechanisms impact the quality of R&D & Marketing integration and ultimately innovation and business performance.

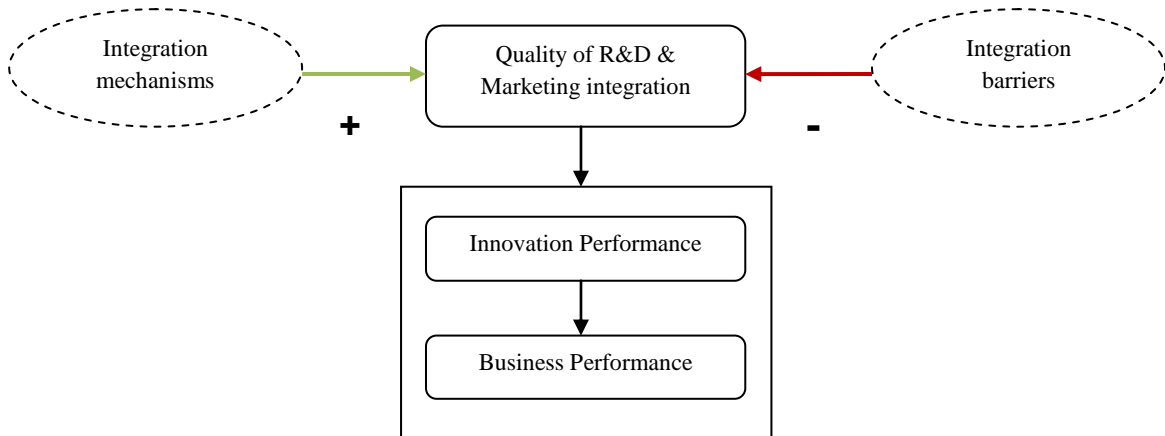
Integration barriers and mechanisms: They refer to the different factors previously described. In this study, the majority of the factors have been statistically analyzed. Cultural through worlds, language and insensitivity to each other's capabilities perspectives' factors have been analyzed only with interviews.

R&D & Marketing integration: the quality of R&D & Marketing integration has been analyzed by looking at the items below:

- The employees of different functions are working together to identify and select new product/technology opportunities.
- Current market information is passed on by marketing to R&D on a regular basis.
- There is an excellent communication between R&D & Marketing employees.
- There is an excellent cooperation between R&D & Marketing employees.
- R&D & Marketing employees share common ideas, collective goals, common vision of the company, "esprit de corps".

Performance: Innovation performance is operationalized by looking at the effectiveness of the R&D process, the protections of the products and processes (e.g. patents) compared to the main competitors, the new products' capacity to enter the market, the returns from R&D investments and the percentage of current sales generated by new or strongly improved products. Business performance is operationalized by creating questionnaires' items about financial position, reputation in the market, flexibility of market responses compared to the main competitors, the yearly growth rate and the operating profit margin.

Figure 2 : Conceptual model



The questionnaire was adapted from WIAT (Wageningen Innovation Assessment Tool) and was composed by 38 questions. To obtain in depth information about the subject, three semi structured interviews have been conducted.

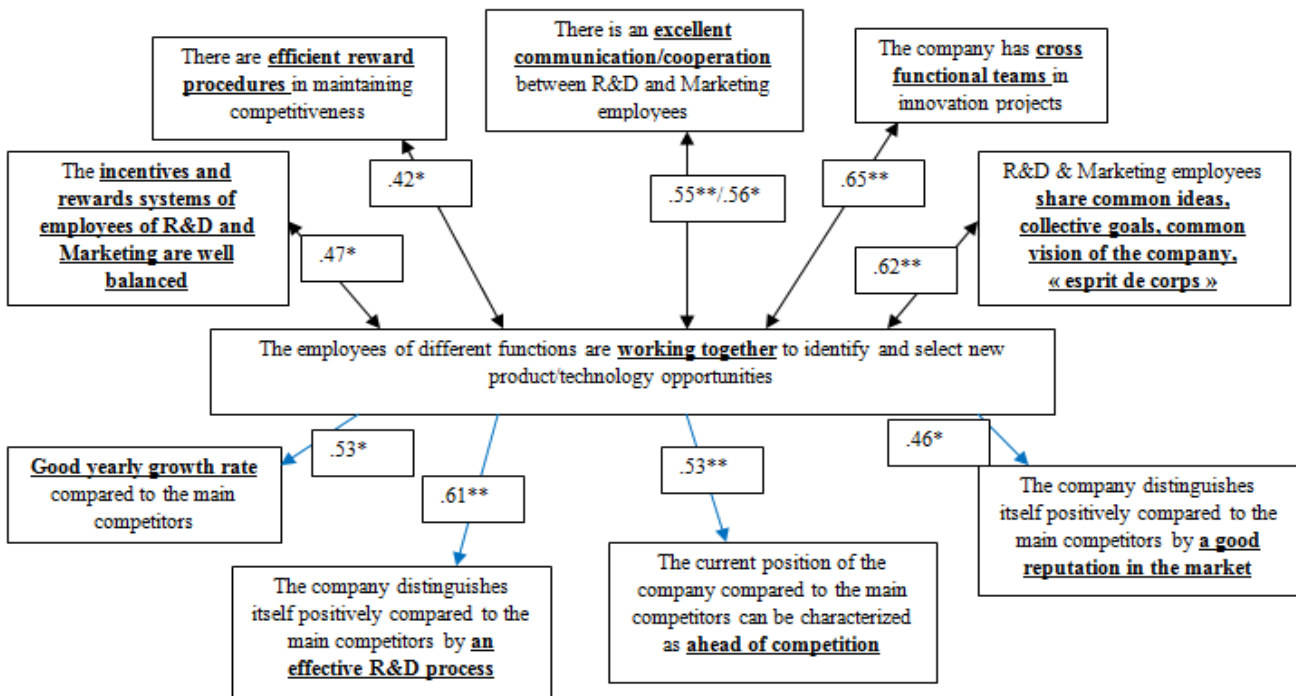
Data collection

The data have been collected during the summer 2010. A total of 30 questionnaires (out of 181) have been sent back. The sample is composed of 63% R&D oriented and 37% Marketing oriented employees. 33% of the companies practice their activity in the dairy sector, 24% in the meat sector and 19% in the vegetables and fruits sector. Concerning the size of the companies, 50% are medium sized (less than 600 employees) and 50% are large companies (more than 600 employees). The small companies (less than 120 employees) have been excluded because those companies do not have separate R&D & Marketing departments and R&D & Marketing integration is not a big issue for them. The three in-depth interviews have been performing with two R&D directors and one Marketing director.

4. Results

Figure 3, Figure 4, Figure 5 and Figure 6 present the significant correlations between questionnaires' items to demonstrate the links between R&D & Marketing integration and performance and between integration barriers and mechanisms and the quality of R&D & Marketing integration.

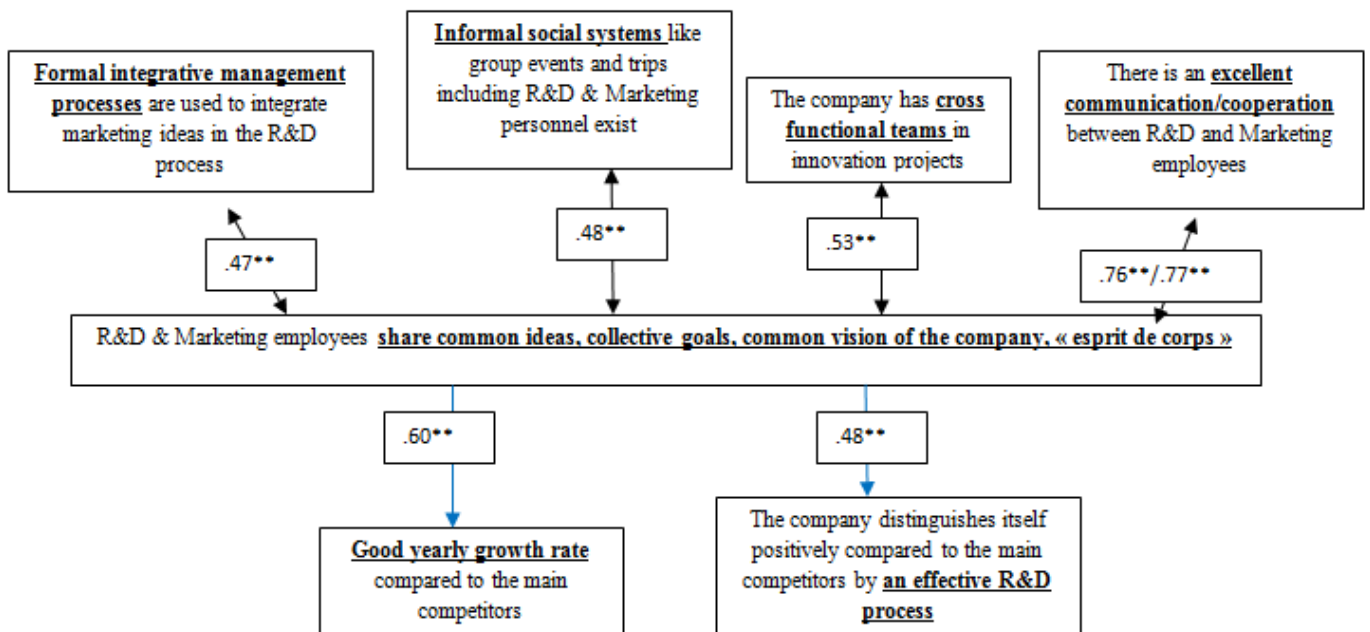
Figure 3 : Employees are working together



*Correlation is significant at the 0.05 level (2 tailed)

**Correlation is significant at the level 0.01 (2 tailed)

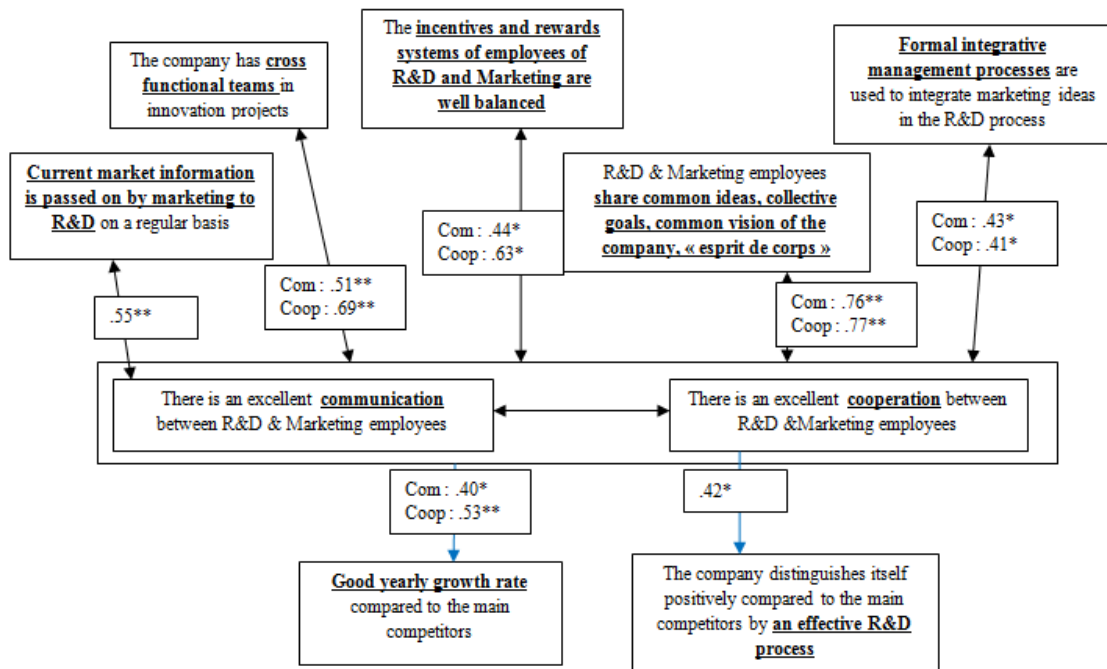
Figure 4 : Sharing of common ideas, collective goals, common vision of the company, « esprit de corps »



*Correlation is significant at the 0.05 level (2 tailed)

**Correlation is significant at the level 0.01 (2 tailed)

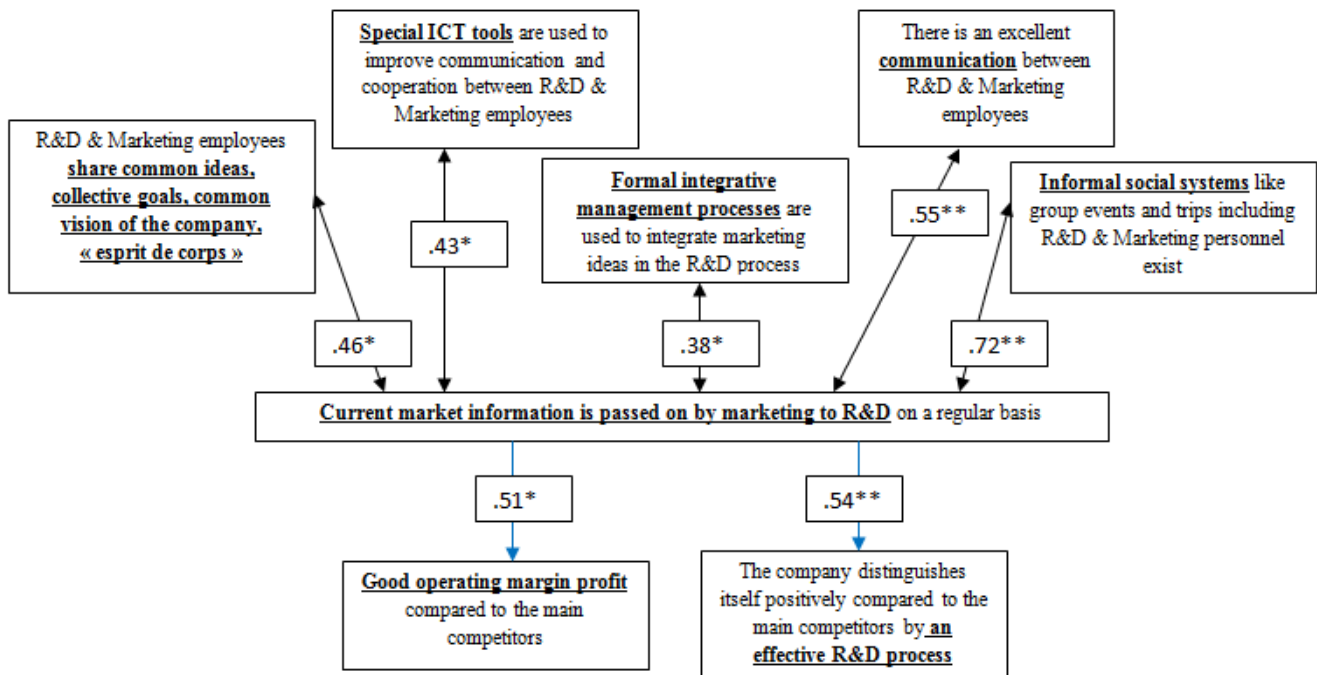
Figure 5 : Communication and cooperation



*Correlation is significant at the 0.05 level (2 tailed)

**Correlation is significant at the level 0.01 (2 tailed)

Figure 6 : Transfer of market information



*Correlation is significant at the 0.05 level (2 tailed)

**Correlation is significant at the level 0.01 (2 tailed)

Impact of the quality of R&D & Marketing integration on innovation and business performance

R&D & Marketing integration positively impacts the effectiveness of the R&D process and ultimately the innovative performance of the participating French food processing companies. R&D & Marketing integration, by impacting the yearly growth rate and the operating profit margin of the companies as well as the good reputation in the market and the position in the market compared to their main competitors, has an impact on business performance of the companies.

In this study, interaction has been measured by asking respondents to mention if their company use or not ICT tools (e.g. emails and videoconferencing) and to precise the frequency of the use of interaction tools such as cross functional meetings. Collaboration has been measured by asking to the respondents how far R&D & Marketing employees share ideas and goals. These concepts have also been discussed during the interviews. It appears that both interaction and collaboration are used in the participating French food processing companies but collaboration is the most implemented one. Interaction and collaboration are both positively linked to the quality of R&D & Marketing integration. Interaction and collaboration, by impacting the effectiveness of the R&D process, positively impact the innovative performance of the participating French food processing companies. Moreover collaboration, by positively impacting the yearly growth rate compared to the main competitors, impacts the business performance of the companies. The findings of the study of Kahn and Mentzer (1998), mentioning that collaboration is the most important factor to well managed R&D & Marketing integration and ultimately to achieve better performance, is confirmed. Concerning interaction, it appears that the frequency of the use of cross functional meetings is much more important to achieve good quality of R&D & Marketing integration than the use of ICT tools such as emails, videoconferencing and phone calls.

Impact of integration barriers and mechanisms on the quality of R&D & Marketing integration

Communication and cooperation: Internal and external communication and cooperation are essential for innovation. A bad communication is described as one of the most important barrier to achieve good R&D & Marketing integration. Good communication and cooperation exist in the participating French food processing companies and positively impact the quality of R&D & Marketing integration. Moreover, communication positively impact both innovative (i.e. effectiveness of R&D process) and business (i.e. yearly growth rate) performance.

Language barrier: Griffin and Hauser (1996) stated that the use of specific terms (e.g. benefits, positioning, specifications and performance) by R&D & Marketing employees leads to misunderstanding. The interviewees mentioned this barrier as one of the most important to achieve good R&D & Marketing integration and common efforts are required from both R&D & Marketing employees. By overcoming language barrier, R&D & Marketing become more sensitive to each other's capabilities and perspectives.

Personnel movement: Griffin and Hauser (1996) stated that personnel change is an essential tool to reduce language barrier. In this study, the results of the questionnaires survey do not prove the positive impact of personnel change on R&D & Marketing integration. Moreover, two interviewees said that it is not a good solution. They think that individual specificities are needed to successfully achieved innovation projects and that, by changing of function, the employees could lose their specificities.

Organizational structure: Griffin and Hauser (1996) mentioned that it is very important to select integrators and the interviewees agreed with that but no link have been statistically found between the quality of R&D & Marketing integration and the selection of integrators. Fortuin and Omta (2009) and Fortuin et al. (2007) stated that teams including employees from different areas are required for successful innovation projects. The participating French food processing companies implement cross functional teams including R&D & Marketing employees. This study shows that the small physical distance between R&D & Marketing department is positively linked to the implementation of cross functional teams. The positive impact of the implementation of cross functional teams on R&D & Marketing integration has been proved and the managers are aware of the importance of the creation of those teams during innovation projects.

Physical distance between R&D & Marketing and ICT tools: The empirical outcomes of this study provide evidence that the respondents do not think that physical distance is an obstacle for communication. According to them, when efficient

management processes such as meetings and committees and ICT tools such as emails and videoconferencing are used, the physical distance is not an obstacle anymore. As ICT tools are rather well used in the participating French food processing companies, especially in the largest ones, the physical distance is not perceived as an obstacle for communication and cooperation between R&D & Marketing employees. This study shows that the use of ICT tools positively impact the quality of R&D & Marketing integration.

Formal integrative management processes: The implementation of interactive sessions including R&D & Marketing employees allows the exchange of market information. Moreover, integrative management processes increase communication and cooperation between employees and ultimately increase the quality of R&D & Marketing integration. This integration mechanism is well used in the participating French food processing companies and positively impacts the quality of R&D & Marketing.

Informal social systems: Informal social systems as parties and trips including R&D & Marketing employees enable communication and help to decrease the language barrier. This mechanism is moderately used in the participating French food processing companies whereas it has a positive impact on the quality of R&D & Marketing integration. Innovative companies organize more social events than the other companies.

Incentives and rewards: The implementation of well balanced incentives and rewards is positively linked to the quality of R&D & Marketing integration but is moderately achieved in the participating French food processing companies. Incentives and rewards should be better balanced by taking into account individual needs of R&D & Marketing employees; well balanced do not signify identical. According to Griffin and Hauser (1996), interrelated rewards to R&D & Marketing increase profit. The interviewees said that motivation drivers to stimulate innovation are not implemented in their companies whereas it has a positive impact on the fact that employees work together to select opportunities and ultimately on the quality of R&D & Marketing integration. According to the interviewees, motivation drivers for innovation are already included in their gross salary. According to them, one good solution to stimulate innovation could be to organize campaign for innovation inside the company by asking employees for new ideas and reward the best ideas with a non financial gift (e.g. tickets for sport activities, trips etc.).

Lack of senior management support: The lack of senior management support to define responsibilities is described as an important barrier to implement good communication and cooperation between R&D & Marketing employees. Even if top managers actively participate in the selection of R&D projects and in the definition of goals and responsibilities, especially in the participating innovative companies, this study do not statistically prove the impact of senior management support on R&D & Marketing integration and ultimately on innovation and business performance. In opposite, the interviewees mentioned the active participation of top managers in the definition of goals, priorities and responsibilities as essential to successfully achieve innovation projects.

Goal incongruity: According to the interviewees, top management commitment to innovation decreases the goal incongruity barrier. In the participating French food processing companies, R&D & Marketing employees share ideas and goals and it is positively linked to the quality of R&D & Marketing integration.

Lack of market knowledge: Management literature states that companies should take customer needs into account to gain innovation performance and that marketing should become more and more future oriented (Fortuin and Omta, 2009; Fortuin et al., 2007). The participating French food processing companies align their products and processes to customers' needs and the market information is well transferred from marketing to R&D department. It has a positive impact on the quality of R&D & Marketing integration. The frequent use of interactions tools such as meetings help to overcome the lack of market knowledge. Costa and Jongen (2006) expect the existence of a positive link between market-orientation and business performance. The empirical part of this study found out a positive and direct link between the transfer of market information and innovation (i.e. effectiveness of the R&D process compared to the main competitors) and business (i.e. position of the company in the market and operating profit margin compared to the main competitors) performance. Therefore, more R&D employees become market-oriented (thanks to the Marketing employees who transfer the market information) and more the companies achieve better performance.

5. Discussions and conclusions

As the response rate is low (16.57%), the representativeness and the generalization of the outcomes is limited to the participating French Food processing companies. Moreover, more than three interviews would increase the quality of the study and the relevancy of the information gathered. Following conclusions are drawn.

Management literature states that R&D & Marketing integration is positively linked to innovation and business performance (Griffin and Hauser, 1996; Kahn and McDonough, 1997; Leenders and Wierenge, 20002; Viaene and Januszewska, 1999; Monaert et al., 1994; Kahn, 1996; Kahn and Mentzer, 1998; Fortuin and Omta, 2009). Griffin and Hauser (1996) and Song and Song (2010) mentioned that R&D & Marketing integration is essential to firms' success in the market place and, according to Kahn and Mentzer (1998), R&D & Marketing integration positively impacts department performance, company performance, product development performance and product management performance. As mention in Section 4, the impact of R&D & Marketing integration on company performance has been verified in this study and especially the impact on the effectiveness of the R&D process (i.e. innovation performance and R&D department performance), the yearly growth rate, the operating profit margin, the reputation in the market and the position in the market (i.e. business performance). The first objective, which was to show the impact of R&D & Marketing integration on innovation and business performance in the French food processing industry is achieved.

Concerning the second research objective, this study shows that several integration barriers and mechanisms impact the quality of R&D & Marketing integration. The positive impact of a good communication and cooperation, the transfer of market knowledge, the implementation of informal social systems, common goals, well balanced incentives and rewards, formal integrative management processes and the use of ICT tools on the quality of R&D & Marketing integration have been confirmed. Furthermore, as mention in the literature, interviewees stated the differences of language and culture and the insensitivity to each other's capabilities and perspectives as important barriers for R&D & Marketing integration. Physical distance is not perceived as an integration barrier insofar as ICT tools and cross-functional meetings are well implemented. As the participating French food processing companies implement those mechanisms, departments' relocation is not necessary (as suggested by Griffin and Hauser, 1996). Concerning organizational structure, Leenders and Wierenga (2002) stated that cross functional teams have a positive impact on departments' integration; it has been confirmed in this study. In opposite, the positive impact of the delegation of an integrator to manage innovation projects on the quality of R&D & Marketing integration has not been confirmed. The literature mentioned that personnel movement can be a mechanism to achieve a good R&D & Marketing integration, but no relationship has been demonstrated in this study.

According to the outcomes of this study, the main managerial recommendations are:

- Implement formal integrative management processes such as regular meetings and interactive sessions between R&D & Marketing.
- Improve R&D & Marketing integration by formulating collective goals, clear innovation objectives, responsibilities and priorities for R&D & Marketing employees.
- Introduce good communication and cooperation between R&D & Marketing employees to decrease the language barrier (i.e. use of technical terms).
- Create cross functional teams for each innovation project with regular meetings (at least once a month).
- Implement group events (e.g. trips and parties) including R&D & Marketing employees to develop affinities.
- Create a well balanced incentive system and motivation drivers and rewards for R&D & Marketing employees.
- Stimulate the intensive use of ICT tools (e.g. emails, videoconferencing), especially when the physical distance between R&D & Marketing is large to increase the communication between R&D & Marketing employees.

References

- CIAA (2008), "Review of key competitiveness indicators", 2008 report
- Costa, A.I.A., Jongen, W.M.F. (2006), "New insights into consumer-led food product development", *Trends in Food Science & Technology*, vol.17, pp. 457- 465
- Debackere, K., Buyens, D., Vandenbossche, T. (1997), "Strategic career development for R&D professionals: lessons from field research", *Technovation*, vol. 17, issue 2, pp.53-62
- Fortuin F., Batterink, M.H., Omta S.W.F. (2007), "Key success factors of innovation in multinational agrifood prospector companies", *International Food and Agribusiness Management Review*, vol.10, issue 4
- Fortuin , F., Omta, S.W.F. (2009), "Innovation barriers and drivers in food processing", *British food journal*, vol. 111, no 8, pp. 839-851
- Griffith, A., Hauser, J.R. (1996), "Integrating R&D and Marketing: a review and analysis of the literature", *The Journal of Product Innovation Management*, 13:191-215
- Gupta, A.K., Raj, S.P., Wilemon, D. (1985), "The R&D-Marketing interface in High-Technology Firms", *The Journal of Product Innovation Management*, vol. 2, pp. 12-24
- Gupta, A.K., Wilemon, D. (1988), "The Credibility-Cooperation Connection at the R&D-Marketing Interface", *Journal of Product Innovation Management*, vol. 5, pp. 20-31
- Igbaria, M., Kassiech, S.K., Silver, M. (1999), "Career orientations and career success among research, and development and engineering professionals", *Journal of Engineering and Technology Management*, vol. 16, pp. 29-54
- Kahn, K.B. (1996), "Interdepartmental Integration: A Definition with Implications for Product Development Performance", *The Journal of Product Innovation Management*, no 13, pp. 137-151
- Kahn, K.B. (2001), "Market orientation, interdepartmental integration, and product development performance", *The Journal of Product Innovation Management*, no 18, pp. 314-323
- Kahn, K.B, Mentzer, J.T. (1998), "Marketing's Integration with Other Departments", *Journal of Business Research*, no42, pp. 53-62
- Kahn, K.B., McDonough, E.F. (1997), "An Empirical Study of the Relationships among Co-location, Integration, Performance, and Satisfaction", *The Journal of Product Innovation Management*, vol. 14, pp. 161-178
- Leenders, M., Wierenga B. (2002), "The effectiveness of different mechanisms for integrating marketing and R&D", *The Journal of Product Innovation Management*, pp 305-317
- Matthyssens, P., Vandenbempt, K., Bergham, L. (2008), "Value innovation in the functional foods industry", *British Food Journal*, vol. 110, no 1, pp. 144-155
- Monaert, R.K., Souder, W.E., De Meyer, A., Deschoolmeester, D. (1994), "R&D-Marketing Integration Mechanisms, Communication Flows, and Innovation Success", *The Journal of Product Innovation Management*, vol. 11, pp. 31-45
- Nicolas, F., Hy, M. (2000), "Apprentissage technologique et innovation en agro-alimentaire », *Economie Rurale*, n°257, pp. 27-41
- Omta, O., Folstar, P., (2005), "Innovation in Agri-food systems – Product quality and consumer acceptance", Jongen, W.M.F, Melenberg, M.T.G. (editors)
- Palpacuer, F., Perez, R. Tozanli, S., Seignour, A., Brabet, J. (2005), « Financiarisation et globalisation des stratégies d'entreprises : le cas des Multinationales agroalimentaire en Europe », *Association Internationale de Management Stratégique (AIMS)*, XIVe conférence Internationale de Management Stratégique
- Song, L.Z., Song, M. (2010), "The Role of Information Technologies in Enhancing R&D–Marketing Integration: An Empirical Investigation", *The Journal of Product Innovation Management*, vol. 27, pp. 382-401
- Viaene, J., Januszewska, R. (1999), "Towards an Integration of R&D and Marketing in Production Development", *Journal of International Food & Agribusiness Marketing*, vol. 10, issue 3, pp. 79-98

Wijnands, J.H.M., Van der Meulen, B.M.J., Poppe, K.J., “Competitiveness of the European food industry – An economic and legal assessment”, European Communities, November 28, 2006

Websites

Agreste France, (2010), « Le commerce extérieur – Mémento 2010 », source : www.agreste.agriculture.gouv.fr

Ania (2010), « les chiffres clés du secteur agroalimentaire en France 2008 », source: <http://www.ania.net/fr/industries-alimentaires/presentation-ania/chiffres.htm#c11272973451>

Ministère de l’agriculture et de la pêche (2008), “Enjeux des industries agroalimentaires”, source: www.panorama-iaa.agriculture.gouv.fr

Ministère de l’agriculture, de l’alimentation, de la pêche, de la ruralité et de l’aménagement du territoire, (2010), « Panorama des Industries Agroalimentaires », Edition 2010, source : <http://panorama-iaa.alimentation.gouv.fr/article>

Qfinance.com (2010), « definition of Value Innovation », source: <http://www.qfinance.com/dictionary/value-innovation>