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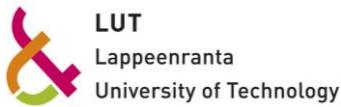
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Melina Maunula

**Conditions and practices in the  
commercialisation of innovations  
in wood industry**

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Lappeenranta  
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## **Conditions and practices in the commercialisation of innovations in wood industry**



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## **Abstract**

**The report 'Conditions and practices in the commercialisation of innovation in wood industry'** has been written as a part of the Wood Academy project. The report analyses the commercialisation conditions and practices of wood industry by utilising product categorisation based on a conceptual schema which combines the aspects of the transfer of the procession of utility and the degree of form/service utility (or value-added) created or provided by the company. Open innovation approaches help to perceive the possible new product and service innovations as well as the new business models and earning logics in the industry. The report also contains brief company cases to demonstrate theory-to-practice and showcase company examples from successful Finnish companies.

## **Tiivistelmä**

**Conditions and practices in the commercialisation of innovation in wood industry** (Puualan innovaatioiden kaupallistamisen edellytykset ja käytännöt) -raportti on kirjoitettu osana Wood Academy -hanketta. Raportissa analysoidaan kaupallistamisen edellytyksiä ja käytäntöjä hyödyntäen liiketoiminnan luonteeseen (tuotteen siirtyvyys asiakkaalle ja lisäarvo) nojaavaa tuotekategorisointia. Avoimen innovaation näkökulmat auttavat hahmottamaan uusien tuote- ja palveluinnovaatioiden lisäksi uusia liiketoimintamalleja ja ansaintalogiikoita. Analyysin elävöittämiseksi raportti sisältää lyhyitä yritys-caseja puualalta Suomesta.

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## **1 INTRODUCTION**

This report is a part of the Wood Academy project (1.5.2011-30.6.2014) and its second work package, the Wood Future Lab. The project is coordinated by Kymenlaakso University of Applied Sciences and funded by the European Social Fund, the Centre for Economic Development, Transport and the Environment (ELY) in Southeast Finland, the city of Kouvola, Kymenlaakso University of Applied Sciences, and private organisations. The focus of the Wood Academy project, and that of this report, is on the Finnish wood industry, especially in South-East Finland.

The work package of the Wood Future Lab includes research activities to support the regional wood product industry and wood living industry, as well as small-scale construction. User-oriented future studies and scenarios are used to spark new business concepts. In addition, the challenges, problems and solutions of the industry, as well as opportunities of open innovation are studied in the work package. This report analyses the current conditions and practices in the commercialisation of innovations in the wood industry.

The framework for analysis utilises five product and service categories, and it is introduced in chapter 2, where the theoretical background is explained, starting with identifying the relevant theories of product and service categorisation used in grouping different businesses. The product and service categorisation introduced in this report is deliberately different from the traditional ways of categorising wood

industry businesses. New connections can only be detected by looking at the industry from a different perspective.

In addition, open innovation aspects and business operations connected to the commercialisation of wood industry innovations are discussed. In chapter 2.2 the theory bases of open innovation are explained, and an overview to open innovation in relation to traditional industries (e.g. wood industry) is given.

In chapter 3 the categorisation of wood industry -related businesses based on the retail utilities schema by Winsor et al. (2004) is introduced. The businesses are divided into the following five categories: i) standardised goods, ii) customised goods, iii) temporal goods, iv) services, and v) hybrid products.

In chapter 4 the practices of commercialisation in each business category are analysed. In order to demonstrate the commercialisation of products in different product categories, the report presents short case examples of Finnish companies focusing on different product categories and examines their views on commercialisation. Chapter 5 concludes the main findings of the report.

## 2 THEORETICAL BACKGROUND

To be able to analyse the commercialisation conditions and current practices of commercialisation in different companies in the wood industry, product/business categorisation is needed. The wood industry consists of many different lines of business which can be categorised in various ways. In Finland the industry has been traditionally divided into basic groups as follows: (1) *basic processing* including the sawmill industry and board industry, and (2) *further processing* including the furniture industry, joinery industry, and timber construction industry, or (1) *timber and wood products manufacturing* including the timber, board, and packaging industries as well as the timber construction industry and other wood product manufacturing, and (2) *furniture manufacturing*. Wood industry businesses can also be categorised in a more comprehensive way by including (1) *bioenergy* and (2) *biorefining*, in addition to (3) *wood products*, and (4) *wood construction*. As the Wood Academy project does not deal with bioenergy and biorefining, this grouping is not relevant in this report. Also, as 70-80% of wood product industry production in Finland ends up in the construction industry (Finnish Forest Industries Federation, 2013), these two industries are strongly linked to each other.

Categorisations like the ones above describe the industry well, but in terms of analysing commercialisation conditions they are rather restricting. The commercialisation conditions and current practises can of course be – and have been – examined through these kinds of categorisations. However, in order to generate new thoughts and viewpoints on the subject, a different grouping is used in this report.

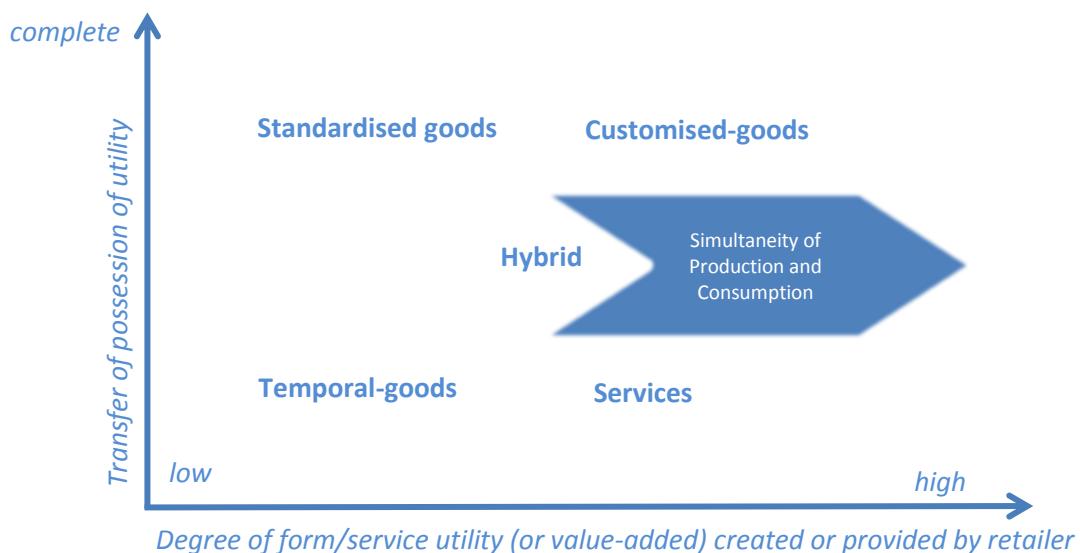
For the categorisation of wood industry -related businesses, a conceptual schema for differentiating goods and services retailing using form and possession utilities presented by Winsor et al. (2004) is outlined. In chapter 3 the schema is applied for the wood industry businesses and a categorisation is made.

To outline the current conditions of commercialising wood industry products and how the commercialisation process might evolve in the future, the open innovation principles are introduced after the retail utilities schema. The schema provides a categorisation for the products/businesses, and the open innovation principles provide theorisation for a global trend of more open interaction within and between organisations. By combining these with the knowledge about the wood industry, the analysis of the commercialisation conditions and current practices of the industry is comprehensive and future-oriented. The analysis is strengthened further with company examples in chapter 4.

In addition, the basic theories of open innovation are presented to show how the viewpoint on innovation processes, including commercialisation, of the wood product industry in South-East Finland can be changed. Open innovation thinking helps to offer such ways of commercialising products and services that are currently extremely rarely used in the Finnish wood product industry but could have a lot of potential in getting more products and services commercialised successfully.

## 2.1 Conceptual schema for differentiating goods and services retailing using form and possession utilities

The intangibility criterion is often used as a basis for categorising and conceptualising retail and service businesses. However, that kind of categorisation explains the issues of retail classification or strategy development poorly. The retail utilities schema presented by Winsor et al. (2004) divides products and services into five product categories: i) *standardised goods*, ii) *customised goods*, iii) *temporal goods*, iv) *services*, and v) *hybrid products*. The retail utilities schema is shown in figure 1 below.

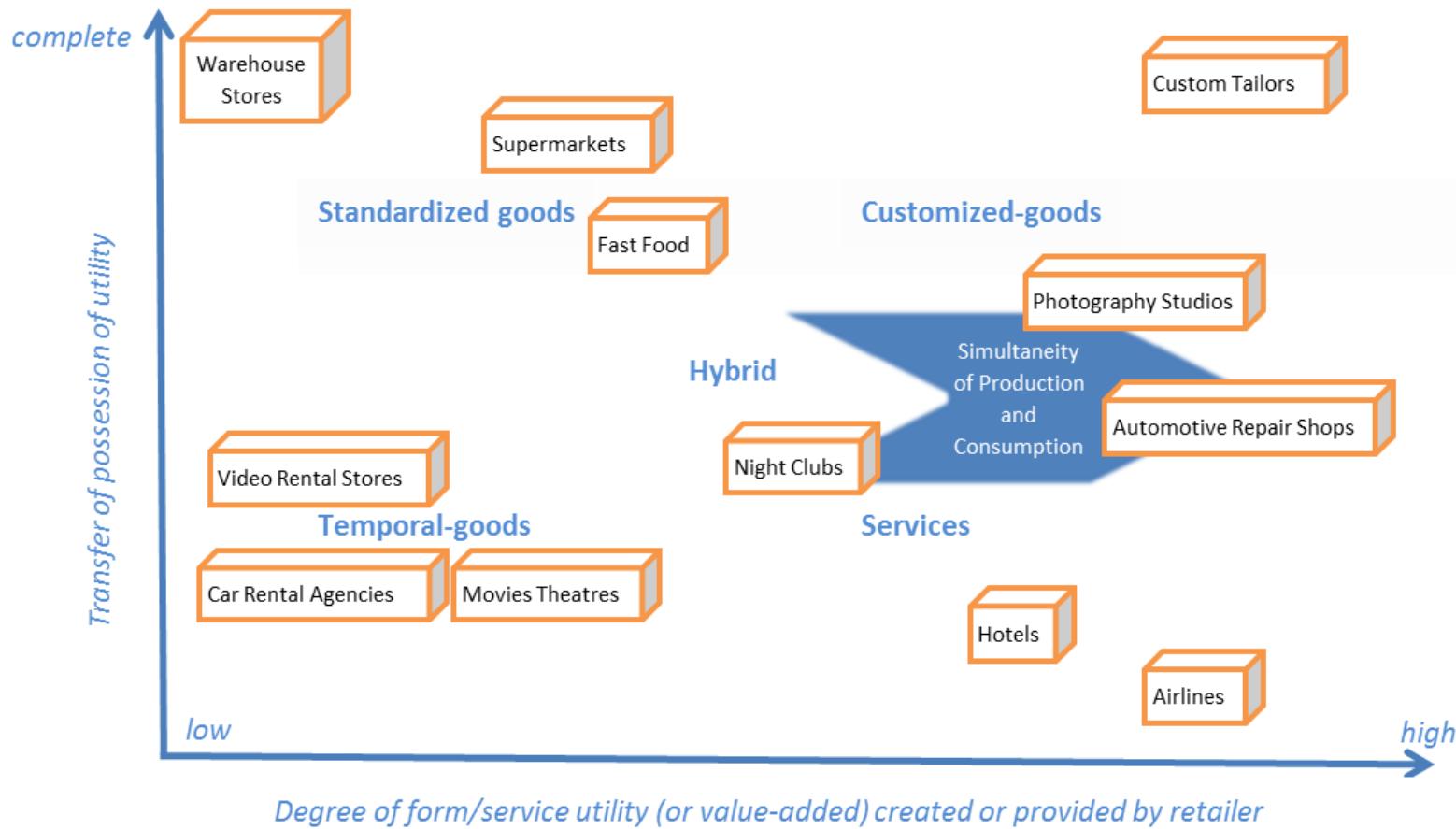


**Figure 1.** The retail utilities schema (Winsor et al. 2004)

Businesses are assessed by the completeness of transfer of possession of utility and degree of form / service utility (or value-added) created or provided by the company. The schema can be used to categorise both products and businesses. The retail utilities schema suggests that as

businesses move from low degree of form / service utility created by the retailer to high degree of form / service utility created by the retailer, the simultaneity of production and consumption increases. (Winsor et al., 2004)

Figure 2 on the next page shows how different businesses can be categorised using the schema in regard to transfer of possession utility and degree of value added provided by the retailer. The model is used to determine the uniqueness of supply and to get indications of the revenue streams related to each business model. (Winsor et al., 2004)



**Figure 2.** The retail utilities schema with examples (Winsor et al. 2004)

The retail utilities schema of Winsor et al. (2004) is suitable for the classification of businesses, and it also helps in strategic planning. The tool can be very beneficial in providing new perspectives in product classification for determining existing and new business and revenue models.

## 2.2 Open innovation

The open innovation process can be characterised by the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation (Chesbrough, 2003). The open innovation paradigm considers internal and external innovations as equally important and balances the roles of internal and external sources of knowledge (van de Vrande et al., 2010). There is a positive trend in the extent to which organisations apply knowledge from outside their boundaries and engage in formal innovation-related collaboration with external partners (Poot et al. 2009). In the open innovation model, internal and external innovation strategies are seen to complement each other (Chesbrough, 2003). A paradigm shift from a closed to an open innovation model requires a shift to the open innovation culture, implementation of open innovation procedures, adopting open innovation skills, and motivation, including changes in the incentive structure (Mortara et al. 2009).

Open innovation is a solution to the restricting effect of companies relying entirely on their own knowledge and ideas, which limits their innovations to a single path to market (Chesbrough, 2003). Before the term open innovation was presented, external knowledge was typically

noted in research as an addition to internal innovation, which constitutes the bases for the innovation performance of a company (e.g., Penrose, 1959; Nelson & Winter, 1982; Cohen & Levinthal, 1990; Von Hippel, 1988; Dyer & Singh, 1998).

Gassmann and Enkel (2004, p. 1) have identified the following three core open innovation processes: “(1) *The outside-in process*: Enriching a company’s own knowledge base through the integration of suppliers, customers, and external knowledge sourcing can increase a company’s innovativeness. (2) *The inside-out process*: The external exploitation of ideas in different markets, selling IP and multiplying technology by channelling ideas to the external environment. (3) *The coupled process*: Linking outside-in and inside-out by working in alliances with complementary companies during which give and take are crucial for success. Consequent thinking along the whole value chain and new business models enable this core process.”

The innovation networks ecosystem (or open innovation 2.0 paradigm) includes integrated collaboration, co-created shared value, cultivated innovation ecosystems, unleashed exponential technologies, and exceptionally rapid adoption. According to Curley and Salmelin (2013, p.?) this requires “a new mind-set focused on teams, collaboration, and sharing”. The open innovation 2.0 model seeks to unite civil, academic, business, and government innovation (Curley & Salmelin, 2013).

### **3 CATEGORISATION OF WOOD INDUSTRY -RELATED BUSINESSES**

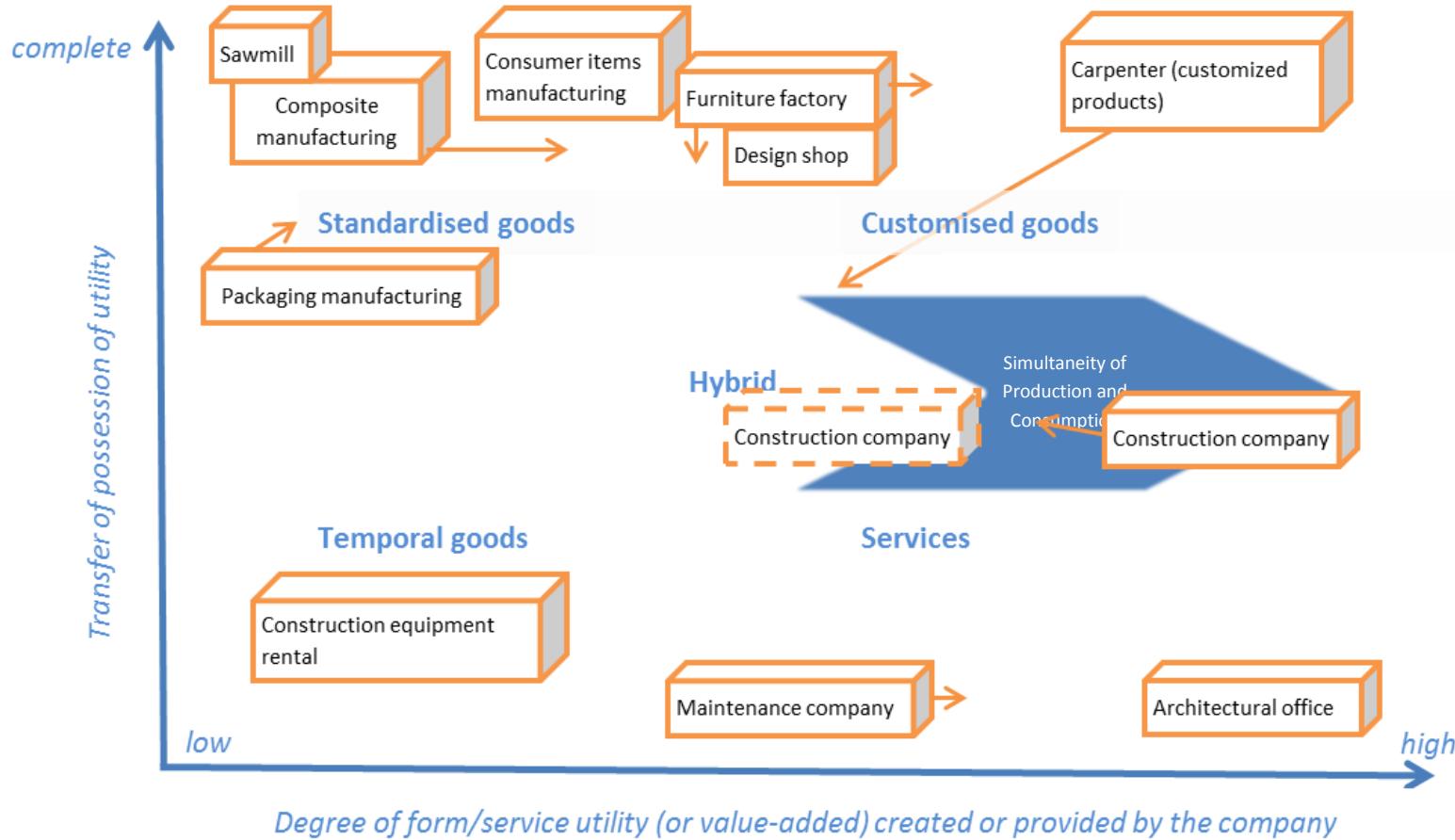
In this chapter, wood industry -related businesses are categorised by using the retail utilities schema. It should be taken into account that the original theory has been formatted for retailing, and some modification in expression might be necessary when using it for a variety of wood industry -related business. However, the schema provides a fresh view that challenges the traditional business categorisation and offers a basis for different options in developing business models and revenue streams of companies.

The product categorisation based on the transfer of possession utility and degree of value added provided by retailer -framework (Winsor et al., 2004) is used to showcase the current business models and to demonstrate how companies can alter their business models and thus their position in the schema.

In the x-axis is the transfer of possession of utility and in the y-axis the degree of form/service utility (or value-added) created or provided by the company. As explained in the theory part of this report, there are five business categories in the scheme: (1) standardised goods, (2) customised goods, (3) temporal goods, (4) services, and (5) hybrid products. Basic wood processing industry businesses belong usually to the standardised goods category. Overall, the standardised goods category is a fairly common category for wood industry businesses, but there are businesses also in the customised goods, temporal goods, and services categories. Also the hybrid category is relevant for some

businesses, but those businesses often fall into the customised goods or services category, but can be put also to the hybrid category depending on the mode of operation of a specific company. In the figure on the next page, some wood-related businesses are located in the retail utilities schema.

All the main features of each of the five categories showcased in the schema (and below in figure 3) are outlined from the wood industry perspective in the following chapters. In chapter 4 the categorisation is utilised to analyse the commercialisation practise of wood-related businesses. Each category is looked into to make a conclusion about the current practices of commercialisation as well as the commercialisation conditions of the wood industry, and short company case-examples are added to showcase real life examples.



**Figure 3.** Categorisation of wood-related businesses by Transfer of possession of utility and Degree of form / service utility (or value-added) created or provided by the retailer

### **3.1 Standardised goods**

Standardised goods have complete or nearly complete transfer of possession utility and low degree of form/service utility created or provided by the company. The products are not especially unique and are produced according to certain standards. For the products to be profitable, the production volumes have to be large and the production process needs to be efficient.

As mentioned above, the standardised goods category is a very common category for forest industry -related businesses. Besides the basic wood processing businesses like sawmills and board industry, it contains businesses like composite manufacturing, consumer items manufacturing, packaging manufacturing, and so on. Furniture manufacturing and design shops fall somewhere in-between the standardised goods and customised goods categories, depending on their products.

### **3.2 Customised goods**

The customised goods category has complete or nearly complete transfer of possession utility and high degree of form/service utility created or provided by the company. The products of this category are customised or unique by nature. Most businesses that fall into the standardised goods category can have also customised products, but as most of their revenue comes from standardised products, they are closer to the customised goods category. If for example a composite or

packaging manufacturing company has a business strategy that prefers customised products, it would in fact be categorised in this category.

In figure 3, carpentry has been categorised into the customised goods category, as most carpenters have a wide product range and are willing to customise their products according to customer needs. However, if the product is composed of only standardised parts or components, the place in the scheme would be somewhere between the customised and standardised goods categories. If the carpentry is partial, for example repairs, the business would go towards the hybrid category.

### 3.3 Temporal goods

The businesses in the temporal goods category have incomplete or no transfer of possession utility, and provide only little added value. In the wood industry -related businesses of this category, for example companies renting construction equipment, a lot of resources have been committed to the equipment that is for rent.

Companies in this category can increase their service providence and move towards the service category. By also customising their products they can transfer into the hybrid category. Maintenance companies can be used as examples of a business type between the temporal goods and the service categories. They can also customise their products/services and shift towards the hybrid category.

### **3.4 Services**

The services category has also incomplete or no transfer of possession utility but it has a high degree of form/service utility created or provided by the company. Architectural offices are a great example of this category. They provide large added value for their customers but there is no transfer of possession utility.

Also construction companies can be put into this category. However, in that case there is some transfer of possession utility. Construction companies can also fall into the hybrid category.

### **3.5 Hybrid**

The hybrid category is in the middle of the scheme and has features of the other categories. The value-added by the company is not high but not low, either. The transfer of possession utility is not complete but moderate instead. In figure 3 the hybrid category is quite empty. Usually the business models of companies are such that they fall into the other four categories. However, many businesses could fall into this category as well. There is a distinguished trend to add services to complement the product offering, and this in fact would move many companies towards the hybrid category.

## **4 COMMERCIALISATION OF WOOD INDUSTRY PRODUCTS**

Wood industry products and services can be distinguished quite easily by using intangibility as one criterion of the categorisation. This is also how wood industry businesses have been categorised traditionally. Usually service-oriented businesses like architectural offices and other design and engineering companies are distinctively seen as a separate group from the manufacturing businesses. As this kind of division can also be seen in the business field, it is quite valid. However, the traditional categorisation does not offer productive and eye-widening tools for looking into the commercialisation process of the wood industry, not to mention for developing business practices.

When the categorisation is done by using form and possession utilities and the transfer of the possession utility, a new viewpoint for looking at the industry is revealed. That is very constructive when looking into the commercialisation process of wood industry products and services. The use of form and possession utilities is also beneficial from the strategy development point of view (Winsor et al. 2004).

The commercialisation process of wood industry products is often perceived as difficult in the Finnish forest industry, or at least seen as an aspect that can be improved on. The Finnish forest industry has been faced with multiple structural changes and changes in the business environment. Despite the challenges, many of the trends affecting the industry, including e.g. urbanisation, amplification of environmental values, tightening of environmental laws and regulations, and increasing scarcity of non-renewable resources, can be also perceived

as opportunities for the Finnish wood industry. The commercialisation of new solutions, including product and service innovations, is very important in realising the new opportunities in the industry field.

Research and development (R&D) activities are important in creating solutions to be commercialised. The R&D investments in the mechanical forest industry have, however, been much smaller than in the chemical forest industry in Finland (Oksanen, et al., 2010). Especially small and medium sized enterprises (SMEs) have limited resources for both R&D and commercialisation processes. Reluctance to change and/or grow can hinder the development potential of some regional wood industry companies, as well as lack of knowledge about strategy development and internationalisation. (Kettunen, 2013)

An active patent strategy allows commercialisation through know-how transfer projects and licensing of those patents that cannot be realised efficiently inside the company, or do not fit its innovation strategy. Open innovation processes can be utilised to strengthen and speed up both innovation activities in R&D processes and the commercialisation of innovations. From the commercialisation perspective, open innovation presents opportunities for different open innovation strategies, including application of (1) outside-in processes, e.g. customer and supplier integration, participation in innovation clusters, applying innovation across industries, buying intellectual property and investing in global knowledge creation, (2) inside-out processes, e.g. licensing intellectual property (IP) and/or multiplying technology by transferring ideas to other companies, and commercialising ideas in different industries (cross-industry innovation), as well as (3) a coupled

process including the outside-in process (to gain external knowledge) and the inside-out process (to bring ideas to market). In order to do both, companies need to co-operate with other companies in strategic networks. All three core processes represent an open innovation strategy, but not all are equally important for every company. (Gassmann & Enkel, 2004)

Robust R&D processes are important, but success requires also clever commercialisation processes to bring innovations to target markets. Especially growth firms in the wood product industry often also need to strengthen their internationalisation skills, as the size of the home market is limited (Kettunen, 2013). Views on commercialising different products and services are showcased in the following chapters. It should be noted that commercialisation processes should be altered not only by taking account of the product category and specific features but also the target market conditions and customer needs. The commercialisation processes must be based on the strategy of the company and thus the strategy development and implementation skills are reflected on the commercialisation. Strategic skills should also be strengthened in the Finnish wood industry companies (Kettunen, 2013).

The commercialisation process of wood industry products, especially wooden construction industry products, is essentially affected by how well architects, designers, structural engineers etc. start utilising them. Often the habit of using a familiar product is hard to break, even if the functions and quality of the new product are better. In the construction industry the end-user is often not the one making decisions in the

designing and building phase, particularly in regard to products that are not visible in the final construct.

The development of new products, materials, processes etc. and the commercialisation of new products or substitute products to already existing ones is only one route to expanding or renewing the supply of a company. In present times the opportunities of new solutions including both products and services offer good opportunities to differentiate one's offering from that of competitors and to respond to customer needs. Services like life-cycle-analysis and digital services offer opportunities also as such.

The on-going bioeconomy transition offers great opportunities for companies in the Finnish wood industry. The commercialisation of bioeconomy products does not necessarily differ from the commercialisation of other wood industry products. Many of the current products can be actually seen to be part of bioeconomy already as such. However, the changes in the business environment, including new cluster and new innovation networks, as well as tightening environmental legislation and amplification of environmental thinking, will have their effects on the marketing potential and innovation capacity of the Finnish wood industry. The innovation policies should help to ensure globally competitive business conditions for the Finnish forest industry also in bioeconomy (Vanhainen, 2013). The commercialisation of outdoor recreational services in forests can also be seen as a business opportunity for the Finnish forest industry.

The next chapters analyse the commercialisation of wood industry products of each of the product categories outlined in chapter 3. Also examples from the Finnish forest industry are introduced.

## 4.1 Commercialisation of standardised goods

Standardised goods are common among wood construction and wood product industries. Standard products help in maintaining even quality and lowering the expenses of production. They also add certainty in short-term forecasting as the product portfolio is more stable, making also incoming orders more predictable. By using same raw-materials, processes or modules in the production, the production process can be made efficient, fast and reliable.

However, from the viewpoint of long-term planning, standardised goods cause challenges, as the production lines are often hard and slow to alter and the development often concentrates on the efficiency of the process and quality of the product, instead of new product, process or business model innovation. Thus, the standardisation of the product offering can be a limiting factor in innovation capacity, as innovativeness is not a necessity in everyday operations, unlike in the customised goods category.

As the profitability of companies producing standardised goods often relies on large production volumes and economies of scale, companies need large amounts of raw material, large storage facilities and production units, including production lines and technology. The

production relies on fluent production and problems in one phase of the process might cause major difficulties for the whole production.

The commercialisation of standardised wood products is very difficult without large investments in production facilities and technology and/or existing production facilities as well as technology that require minor altering for the new production. The availability of raw material, price and logistics play an important role. In order to be able to benefit from the economy of scale, one must have quite a lot of orders right from the beginning, which in turn requires the ability to produce in the promised time and quality to fulfil the customer needs.

Because of the needed investments and big risks involved in the beginning of large scale production, the emergence of new companies producing standardised wood products is quite rare. Often new companies arise from acquisition, mergers, spin-offs and expanding and separating existing operations in an existing company, as well as new ownership or acquiring of a bankrupt estate. In order to succeed in forming a new company that produces standardised wood products in large volumes without taking an enormous risk, one needs existing and steady demand or suitable facilities and/or technology.

In a smaller scale, standardised wood products can be profitably produced only if the added value is large enough to secure profitability. Thus, the products must be unique and innovative. Competing with a standardised product produced in small scale is very difficult, as the business lacks the benefit of economy of scale or the large value added from customised goods. However, it is possible to find a niche in which

this approach works. However, long-term success requires either very unique knowledge and/or very close co-operation with customers which ensures the absence or failure of competitors or constant innovating and being always one step ahead of competitors.

Differentiating the products from the offering of competitors helps a lot in commercialising a new standardised wood-based product. An innovation in the production technology or the business model might also work by making the product cheaper or otherwise more attractive to the customer.

**Showroom Finland** concentrates on design product range offering. The company was established in 2001 by Tuula Hocksell and Leena Liedenpohja. They both have previous experience in various Finnish design companies. The business is based on the founders' shared vision of contemporary Finnish design philosophy as well as a view of open and direct communication in business, which is also reflected in the company profile presented on the website of the company: "Showroom Finland is a Helsinki based company with a product portfolio consisting of intelligent design. In Finland forests provide the country with sustainable resources to produce plywood and cardboard products. Here both design talent and industry have developed into top professionals when it comes to woodworking. Manufacturing and designing mainly on home soil, Showroom Finland refines this expertise to create classics of tomorrow." Showroom Finland has been granted several international design awards. (Showroom Finland, 2013) The turnover of the company has increased steadily during the last few years, but its net result in 2012 was negative, which reflects the

difficult business conditions in the wood product industry (Creditsafe, 2013; Suomen Asiakastieto, 2013). In 2013 the result was again positive and the same good development seems to continue in 2014 (Hocksell, 2014).

The Showroom Finland brand includes products like light fixtures, wall elements, cardboard furniture, storage furniture, souvenirs and gifts, as well as superfood (Showroom Finland, 2013). The business model of Showroom Finland is based on selecting designs and products that are suitable for the Showroom Finland brand. The designers get either a lump sum or a royalty for a design, as well as reputation from getting his/her design presented in trade fairs etc. and from getting it to prestigious distribution channels. The designers also benefit from the existing networks and sales channels of Showroom Finland (Hocksell, 2014).

Products designed by freelance designers are included under the Showroom Finland brand, making it stronger. Showroom Finland works with freelance designers and provides their designs exposure through their well-known Scandinavian brand. Showroom Finland selects the suitable suppliers and/or manufactures through putting out tenders. If needed, the company also invests in industrial tools such as molds etc. needed in the production. Products under the Showroom Finland brand are showcased in trade fairs and sold in Finland in stores like Stockmann and Vepsäläinen, as well as online stores like Finnish Design Shop, All Things Moomin and Finnay. The international sales cover 30 countries worldwide. Showroom Finland also enters their products in design competitions worldwide. Organisations selling the

products do not necessarily offer all products and product categories represented by Showroom Finland. (Hocksell, 2014)

In my opinion, the success of the company is related to the expertise in selecting promising designs to be included in the brand with exclusive rights, as well as in providing designers' products selected by Showroom Finland with marketing and sales channels and a mature brand which complements the product or product line. Also the networks with production facilities can be important in ensuring the needed production volume and quality. The business model of Showroom Finland is based on commercialising and promoting designs that build part of the Showroom Finland product range and brand. The commercialisation process relies a lot on the brand, which makes its development extremely important as well.

## 4.2 Commercialisation of customised goods

Customised goods are also a common product category in the wood industry. Probably the most obvious customised wooden products are carpentry products. The customisation of products enables a maximal added value for the customer and ensures the uniqueness of the product and its perfect fit for the intended use. These are factors that also allow a higher price and help to avoid competition. The business usually requires very close contacts with customers and a good understanding of the wants and needs of the clients. Customisation necessitates constant innovativeness and ability to learn fast.

Customised wood products can be based on design, carpentry and craftsmanship, novel wood-based materials and refining of wood, and/or combining wood-based and other materials or solutions. The products require adaptability, feasibility, novelty, innovation, and functionality. As the products are customised for the client, the commercialisation may require marketing of knowledge or know-how, or the adaptability of products rather than the marketing of the final product and its properties.

The exact solution that fits one client may not fit any other clients. Also in the case where the product provides unique competitive edge for the customer, they would not want the product to be sold to their competitors, especially if they have been involved in the development of the product. In many cases, development and commercialisation of customised products requires trust. Thus, the relationships with the clients are extremely important and the existing client base can be the most important source of innovation in addition to orders. However, some products are such that the customer will only buy one and not return for a decade, which means that the company must constantly seek for new customers and market itself aggressively.

Marketing and innovativeness can be largely enhanced by networking and following the principles of open innovation (see chapter 2.2). With adding services into the product offering and reinforcing it with products and services of a partner organisation, the product categorisation can be moved closer to the hybrid or service category (see figure 1). This way the company can provide a more wide range of

products and more comprehensive solutions to their customers, providing thus a customised solution instead of a customised product.

**Vankkapuu** utilises the strategy described above by supplementing their own wide product offering with services, as well as products and services provided by their partners. Most importantly, however, the company adds a lot of customisation to their products in addition to having standardised products. In regard to the categorisation of wood-related businesses in figure 3 on page 13 Vankkapuu would be placed somewhere between the standard and customised category and the hybrid category with moderate degree of form / service utility (or value-added) created or provided by the retailer, and almost full transfer of possession of utility.

Vankkapuu is a family business in wood processing -industry based in the South Karelia region in South-East Finland. The company was established in 1986 and has 27 employees. The company offers solutions for industrial customers, construction companies and for individual consumers' needs. Vankkapuu focuses on industrial subcontracting but has also a retail outlet of timber and building materials for serving consumer customers. Vankkapuu is known for high quality products, as well as reliable and flexible customer service (Vankkapuu, 2014; Vanhatalo, 2014).

Vankkapuu offers industry clients various products, including pallets (to customers' specification), recycling of cardboard cores (incl. logistics), core plugs for paper and board industry (size can be customised to each customer), planed timber products including interior

panels and floor boards (also custom profiled planing within a tight schedule, connecting profiles to each other and cutting to specific length as well as pre-packaging) and pre-cut timber frame parts (incl. marking and packaging the product) (Vankkapuu, 2014; Vanhatalo, 2014).

For builders, Vankkapuu offers a wide range of timber products as well as other construction materials from their own inventory. However, if they do not have the product the customer is looking for, they promise to find it or manufacture it themselves to fulfil the customer need. They also deliver products if needed. In addition to materials, Vankkapuu offers also experienced and skilled carpentry for new building and renovation sites as well as Termex and Rockwood insulation installations (Vankkapuu, 2014; Vanhatalo, 2014).

The product portfolio of Vankkapuu includes segments that can be placed in different places in the categorisation of wood-related businesses outlined in figure 3 on page 13. For example, the product categories of planed timber products and pre-cut timber frame parts have much more customisation available than pallets, cardboard cores and core plugs, although all products can be customised to some extent. In addition to customisation of products as well as working with customers' specifications, Vankkapuu offers services like delivery and logistics as well as carpentry and insulation installations. The service offering of Vankkapuu is mainly targeted on builders, including both corporate and private customers, but services are also linked to products in order to add customer value. (Vanhatalo, 2014)

Vankkapuu offers their customers not only quality products and services but also solutions based on the customer need. Most of the products of Vankkapuu can be customised and complemented with services provided by the company itself or its partners. A great example of a customer need -based solution are the dimensionally accurate pre-cut timber frame products of Vankkapuu which allow for considerable time savings on site and reduce the amount of generated waste. (Vankkapuu, 2014)

The commercialisation of products, services and solutions benefits from the partner network Vankkapuu has. It also allows the company to have a wider offering than it could have by itself. I would also like to emphasise the use of Finnish raw materials and co-operation with raw-material producers, which can also be the key in ensuring quality and the opportunity to increase production volumes. From the point of view of commercialisation, the diverse knowledge base of the company in all product categories is important, as well as understanding the needs of different customer segments. Good customer service skills and processes support commercialisation, as well as research and development in the company. (Vanhatalo, 2014)

### **4.3 Commercialisation of temporal goods**

As the added value of temporal goods is low, the added value of the raw material of the wood-based product is bound to be low as well. However, if the use of wood can add to aspects of safety, environmental friendliness and/or usability, and does not add considerably to the cost of the product, it may be a very good option.

When commercialising wood-based temporal goods, the same benefits and selling points are mostly relevant as in the other product categories. As temporal goods do not stay in use for long, it is important to solve problems of reuse, recycling and waste minimisation. Wooden products may not be as weather and abrasion resistant as products made from other materials like metal, and the disassembly and reassembly of a wooden construct may not always be easily achieved. However, as the wood-based materials and solutions increase in quantity and quality, new innovations might make such products possible that are completely interchangeable with products made from other raw-materials. If this can be done cost-effectively, e.g. the environmental aspects provide a clear competitive advantage. What comes to recycling and waste minimisation, wood is a very good raw material from both viewpoints.

#### **4.4 Commercialisation of services**

According to a release of the Finnish Forest Research Institute (Metla. 2012), the biggest growth prospects in Finnish forest industry are in the service sector. Hetemäki (2012) points out that many professional services, like management, design, research, development, consultancy, training, and education services already exist in the field. Bio-economy and construction can also be seen as opportunities for service businesses, not just for woody biomass production and processing.

Services can be added to the product offering to complement other products and to provide overall solutions. Thus, the offering moves towards the service category but not into it (see figure 1, page 6). The

product offering can consist of products from different categories, providing comprehensive solutions. In that case the company must take different aspects of commercialisation into account.

**Green Building Partners** (GBP) seizes the opportunities presented by bio-economy transition and construction industry for service providers. GBP offers environmental, energy, and life cycle services for the construction industry. GBP provides environmental impact certifications according to LEED, BREEAM and Promise rating systems, as well as services for energy management, development of property management, and property tax review and optimisation. (GBP, 2014)

GBP was established in 2011 and the company has been performing well. In June 2013 the legislations changed so that now the energy certificates require more calculation and the energy consumption must be simulated already in the building permit stage of the project, which has increased the demand of the services GBP provides. The included E-ratio of the building takes account of the ecology of both energy consumption and the used form of energy. (Progman, 2014)

GBP has an extensive service portfolio including all elements of environmental control in construction from project planning targets to environmental management in the operation and maintenance phase. The company already has an impressive list of references it uses to promote its services (GBP, 2014). As the market of environmental, energy and life cycle services is growing, the commercialisation of services relies on references and good reputation as well as developing

services and the service portfolio and keeping in tune with the changing legislation and standards. Also the tools and software the company uses are crucial for the efficiency and quality of the provided services.

The services of GBP include a lot more than just environmental impact calculations and certifications. Environmental ratings give bases for open conversation about energy efficiency and solution development within construction projects and between different stakeholders. In relation to the energy efficiency of buildings, GBP offers systematic guidance for the whole process, external expert services as well as open dialogue. In services targeted to property management and maintenance clients, GBP also facilitates open dialogue. In addition to software-based calculations and certificates, GBP provides regular steering meetings and personal guidance for its customers and commits to their projects. (GBP, 2014)

## 4.5 Commercialisation of hybrid products

As hybrid products consist of a combination of features of the other four product categories, aspects of the other categories have to be taken into account in their commercialisation. A hybrid product can be an overall solution to a complex problem, consisting of standardised parts/goods, customised bits/goods, temporal goods, and/or services. However, if the offering consists of separate products from different categories, the commercialisation of those products could also be examined within each categorisation. It is important to understand that an order consisting of products and services from different categories is not the same as a hybrid product, unless the different parts come

together as one solution which is commercialised and marketed as a whole. In this case the solution is customised by changing and adding different features from different product categories.

As mentioned above, the added value of hybrid products is not especially high but not low either, and the transfer of possession utility is moderate. In hybrid businesses there are a lot of components and viewpoints to take into account in the commercialisation process as well as in the product/solution development. However, hybrid products can be quite easily altered to fit the needs of different clients, and the complexity of the product makes it very hard for competitors to copy. Having a tight combination of standardised and customised parts and/or services also provides a wider range of revenue streams and offers good opportunities for business model innovations.

Development, commercialisation and doing hybrid product business requires diverse expertise, as the company must have the knowledge needed to understand all parts of the provided solution and to be able to improve and alter it. Even though the complexity of the product in a way lowers the risk as it gives more options, it also makes the operations more complex.

**Siekkelin puutyö** manufactures and builds log homes and cottages with the experience of three decades. The company operates also in the export market and thus possesses an international co-operation network. The wide product and service offering of Siekkelin puutyö is further supplemented with services provided by their partners. (Siekkelin puutyö, 2014)

The product and service offering of Siekkelin puutyö consists of a design catalogue and the opportunity to utilise the design of the client, a log frame from a selection of log sizes, a more comprehensive delivery package of wooden parts of the building, as well as options of construction from assembly of log parts to a turn-key delivery. So, not only the product itself, but also the delivery process is customised and can be further complemented with services like getting building permits, foundation work, as well as HVAC and electrical work provided by the company itself or its multiple partners. However, many parts and services are standardised, and customisation is often based on combining different products and services in a way that creates the desired outcome for the customer. (Siekkelin puutyö, 2014)

The fact that Siekkelin puutyö has products ranging from standard to individually designed and from low to high value added as well as low to high degree of form / service utility created or provided, puts the company to the section of hybrid businesses in the wood industry. The company offers its customers standard products and services as well as overall solutions, taking the individual needs of the customer into account.

## 5 CONCLUSIONS

Structural changes have affected the business environment in the Finnish forest sector and made it necessary for companies to change. Many of the trends affecting the industry can also be seen as opportunities for the Finnish wood industry. However, to realise those opportunities, product and service innovations, including their commercialisation processes, are highly important. Commercialisation processes are often perceived as an aspect that could be improved in the Finnish forest industry.

The bioeconomy transition offers great opportunities for the Finnish wood industry. The construction industry has a significant role in sustainable development due to e.g. big volumes and long life-cycles. Globally, 40 to 50% of all materials extracted from the earth are annually transformed into construction materials and products (EU, 2008). Approximately 40% of the total amount of waste generated in Europe comes from construction and demolition prior to recovery (EU, 2008). Wood as a renewable material has great potential in tackling many sustainability issues in the construction industry as well as other industries.

The retail utilities schema is a tool for strategic planning, but in this report it was used in product categorisation as well. The schema can be used in determining the uniqueness of supply and to get indications of the revenue streams related to each business model (Winsor et al., 2014). The retail utilities schema helps companies to grasp how they can alter their business models and move their position in the schema.

The retail utilities schema divides goods into five categories: 1) standardised goods, 2) customised goods, 3) temporal goods, 4) services, and 5) hybrid, according to the completeness of transfer of possession of utility and the degree of form / service utility (or value-added) created or provided by the company (Winsor et al., 2014).

Businesses in the standardised and customised goods categories are common in the wood industry. The commercialisation of standardised goods often requires large investments in production lines or existing production lines, as the business relies on the economy of scale. Production lines are usually expensive and slow to alter, and thus day-to-day innovation activities tend to be focused on the efficiency and reliability of production instead of new product, process and business model innovations. Businesses in the customised goods category, on the other hand, require the capacity to innovate and learn to enable customisation and the perfect fit of the product for each customer. Close contact with customers is important in the customised goods category, and the commercialisation of products may require marketing of knowledge or adaptability of the product instead of defined product properties.

The other three sections in the schema are not so common (see figure 3 on page 13) in the Finnish wood industry. Temporal goods are relatively rare and do not offer major opportunities in the wood industry. The same selling points are mostly relevant to temporal wood-based products as to other wood products. As temporal goods do not stay in use for long, it is important to solve problems of reuse, recycling and waste minimisation. The biggest growth potential in Finnish wood

industry is claimed to be in the service sector (Metla, 2012). Wood industry -related services include design, architectural services, structural engineering, life-cycle analysis, marketing, logistics, etc. Digitalisation, tightening environmental standards, resource efficiency and corporate responsibility measures, innovation networks and cluster activities, internet of things, and many other trends offer great opportunities for service businesses also in wood industry. Adding services to the company's other offering moves the business towards the service category. Solutions including both products and services offer good opportunities to differentiate the company's offering from the competition and to respond to customer needs. Thus, also the hybrid business category will offer a lot of opportunities in the future, as hybrid products are often relatively easy to alter to fit the needs of different clients, as well as hard for competitors to copy. Hybrid businesses may also have a wider range of revenue streams and offer good opportunities for business model innovations.

Commercialisation processes should be based on product category features, the conditions of the target market, customer needs, and the strategy of the company. Thus, strategy development and implementation affect the commercialisation processes as well. The innovation capacity of Finnish wood industry companies could be significantly improved through open innovation practices. Internal and external innovation are equally important, and applying knowledge from outside the company boundaries and engaging in formal innovation-related collaboration with external partners can be crucial in responding to the changes in the business environment. Especially many wood industry SMEs have limited resources for R&D and

commercialisation activities and would benefit from innovation networks and co-operation.

Open innovation processes can be utilised to strengthen and speed up innovation activities in both R&D and commercialisation processes. The implementation of open innovation requires a paradigm shift, which includes adopting an open innovation culture and open innovation skills, as well as implementation of open innovation procedures and new motivational structures (Mortara et al., 2009). The open innovation 2.0 paradigm, in other words innovation networks ecosystem, highlights teams, collaboration, and sharing by uniting civil, academic, business, and government innovation (Curley & Selselin, 2013). Open innovation thinking helps to offer such ways of commercialising products and services that are currently very rarely used in the Finnish wood industry but could have a lot of potential in making more products and services commercialised successfully.

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