

**DIGITALISATION AND CIRCULAR ECONOMY:
forestry and forestry based industry implications**

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**RESPONSIBLE CONSUMER
IN THE CONTEXT OF
CIRCULAR ECONOMY**



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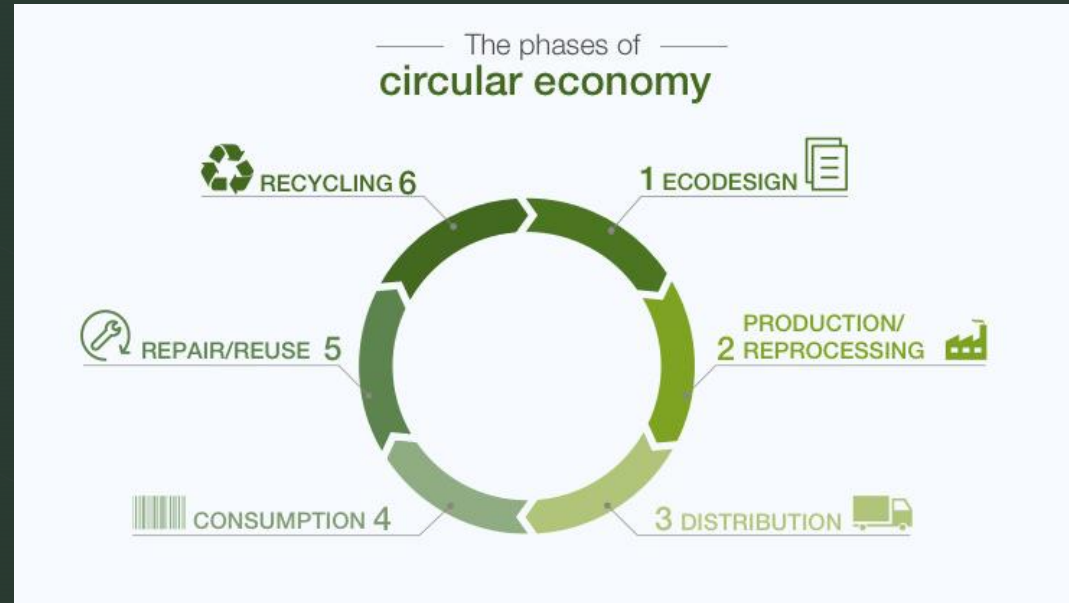


The objective

- The paper describes consumer from “the circular perspective” using the 6R-strategies prism

Circular economy and R-strategies

- The circular economy



- **R-strategies / frameworks for companies:** 3R (1. Recycle, 2. Reduce, 3. Reuse) , 4R (+ 4. Recover - incineration of materials with energy recovery) , and 9R (+ 5. Repurpose, 6. Remanufacture, 7. Refurbish, 8. Repair, 9. Rethink)
- These frameworks can be implemented on the both sides of the market: **supply (companies)** and **demand (consumers)**

Circular economy



Increasing circularity

Linear economy

Strategies

Smarter product use and manufacture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
	R1 Rethink	Make product use more intensive (e.g. by sharing product)
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
	R4 Repair	Repair and maintenance of defective product so it can be used with its original function
	R5 Refurbish	Restore an old product and bring it up to date
	R6 Remanufacture	Use parts of discarded product in a new product with the same function
Useful application of materials	R7 Repurpose	Use discarded product or its parts in a new product with a different function
	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of material with energy recovery

Circular economy and R-strategies

- Some dimensions of R-strategies are not functional in the companies without an active participation of the consumers – e.g. if consumers are not active in the recycling process, companies cannot effectively continue to recycle
- Effective green marketing is the way to inform and invite consumer to cooperate. It is based on high-quality segmentation of green consumers
- R STRATEGY FOR CONSUMER
- As well as for companies, there are “R consumer frameworks” discussed by scholars. According to Alatervo (2013), consumer sustainable behaviour should be based on the following dimensions: 1. Recycle – separate items in household, 2. Reduce – buy only what they need, reduce products with less packaging, 3. Refuse – don’t generate waste, decrease consumption. 4. Re-use/ Repair – extend items products cycle, 5. Rethink/ Reinvent – consider the consumption of the product. 6. Replace/Rebuy – products with eco materials or certification (Alatervo, 2013).

METHODS

- January and February 2018 – data collection (respondents aged over 18)
- The non-probability sampling method was used – a snowball sampling technique using an electronic questionnaire
- 1061 analysed questionnaires
- The questionnaire deals with: decision-making process for buying consumer goods, green products buying process, factors which influence buying process of consumer goods, and general environmental behaviour / green habits of the respondents
- The scale of answers: from 1 (definitely yes), 2 (yes), 3 (neither yes nor no/indifferent), 4 (no) and 5 (definitely no)
- The k-Means and EM algorithms in the Generalized EM and k-Means Cluster Analysis module of the STATISTICA 12 software were used in the cluster analysis. For the distance measure, a Squared Euclidean measure was used
- 33 items were analysed. Each item represents one of the dimensions defined by Alatervo (2013). Mann Whitney U-test was used to confirm the differences between clusters

FINDINGS AND RESULTS

Table 1 Results of the cluster analysis (n = 1061) / Mode – the most often value

	Reduce (8 items)	Rethink /Reinvent (3 items)	Replace /Rebuy (11 items)	Recycle (4 items)	Reuse (5 items)	Refuse (2 items)	N	%
Cluster I – average	2.49	3.02	3.12	2.74	2.69	3.08	668	62.96
Cluster I – mode	2	3	3	2	2	3		
Cluster II – average	2.01	2.26	2.48	1.94	2.24	2.33	393	37.04
Cluster II – mode	1	1	2	1	1	1		

FINDINGS AND RESULTS

- 2 clusters: **Cluster 1 (CL-1)** consists of respondents (62.96%) who claim **positive attitudes only to dimensions Reducing, Recycling, and Reusing** and declare neutral attitudes towards Rethink/Reinvent, Replace/Rebuy and Refuse
- It could be stated, that they are following classical 3R concept (reduce, reuse and recycle). Thus, we have named this cluster the "**CONVENTIONAL CONSUMERS**"
- Respondents from the **Cluster 2 (CL-2)** declared positive attitudes even **in all the six dimensions**. Thus, we have named them as "**CONSCIOUS CONSUMERS**". About 37% of the respondents belong to this cluster
- The Mann Whitney U-test on 33 statements was conducted between these two clusters. **Significant differences between the clusters were confirmed** (at level of significance $p < 0.05$) and so, **the clusters differ from each other** (non-parametric test was used since data was not normally distributed)

FINDINGS AND RESULTS

Table 2 Different attitudes of both clusters

Dimension	Statement	Conventional consumers	Conscious consumers
Rethink / Reinvent	“My purchase decision is affecting by: whether a product is environmentally friendly”	Neutral answer	Agreed
Replace / Rebuy	“I try to prefer environmentally friendly products instead of non-environmentally ones”	Neutral answer	Agreed
	“I buy products, which were made ethically”	Neutral answer	Agreed
	“My purchase decision is affecting by: if the product, or its part can be recycled”	Neutral answer	Agreed
Refuse	“I am avoiding buying products from companies acting unethically”	Neutral answer	Agreed
	“I boycott some products and brands”	Neutral answer	Agreed

FINDINGS AND RESULTS

Table 3 Similar attitudes of both clusters

Dimension	Statement	Conventional consumers	Conscious consumers
Reuse	"I try to use the products as long as they fulfil their purpose."		Strongly agree
	"I donate products that I do not use (such as clothes) to friends, family, charity instead of throwing them into the trash."		Strongly agree
Reduce	"I don't think ecological problems are boosted by environmental organizations (e.g. Greenpeace, etc.)"		Strongly agree
	"I try to drink tap water and not to buy bottled water in plastic bottles"		Strongly agree
	"I only buy environmentally friendly products".		Neutral answer
Replace/Rebuy	"I buy FAIRTRADE products"		Neutral answer
	"I buy products (e.g. furniture, paper, hygienic handbags) certificated by FSC/PEFC"		Neutral answer
	"I buy products labelled as BIO or green food."		Neutral answer

Conclusion

- The two distinct clusters were revealed: **Conventional consumers** (CL-1 about 63%) and **Conscious consumers** (CL-2 about 37%).
- **The Conventional consumers** are described as those following the 3R framework – Reduce, Reuse, Recycle.
- **The Conscious consumers** expressed more environmental consciousness also towards activities: Rethink/Reinvent, Replace/Rebuy and Refuse.
- These three dimensions could be linked with before buying behaviour (precycling activity). Klug and Niemad (2018) mentioned in their study that “precyclers comprehensively consider anti-consumption practices for sustainability” and they are conscious consumers focusing on avoiding or minimizing waste: they reject, reduce and reuse. **And thus, we supposed that Conscious consumers are somewhat prepared to participate in the 6R strategy and spin the wheel of circular economy.**
- We are also aware that respondents in our study might tend to present a favourable image of themselves, which is known as socially desirable responding (SDR) (Johnson and Fendrich, 2005; Paulhus, 2002).

Conclusion

- Rypakova, Stefanikova and Moravcikova (2015) mentioned that the previous political regime (1948-1989 – where demand exceeded supply in many categories of the consumer goods) could affect present patterns of buying behaviour of the Slovak population. Afterwards, a part of population started to enjoy consuming and "non-green consumer behaviour".
- Simultaneously, many Slovaks (during socialistic regime) had to: reduce consumption, recycle materials, reuse and repair things. We are aware that the causes of such behaviour had not a green but rather economical background, but such habits could persist and later shift buying patterns and behaviour with different than economic motives.
- Organisations across all spectrum of sectors (government, NGO's, education infrastructure etc.) should encourage individuals to "re-use" their old habits. Such an effort needs a clear message, proper communication tools, and stimulative educational programmes.
- Simply, a lifestyle of conscious and responsible individual means to be much more citizen than the consumer.



Thank you!

