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Adoption of Digital Frugality in HRM: A Study of Factors Influencing the Behaviors of Tunisian HR Manager

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ABSTRACT: *The study focuses on factors influencing the adoption of digital frugal behaviors by Tunisian HR managers. It follows a structured approach, beginning with a theoretical framework that integrates digital frugality into HRM and discusses the UTAUT model's relevance. The research methodology involves a quantitative survey method targeting HR managers in Tunisia, and data analysis is conducted using Structural Equation Modeling (SEM) techniques. The results indicate that performance expectancy and effort expectancy positively influence the intention to use digital frugal HR applications. The study concludes by highlighting the significance of technology adoption in HRM, especially in the context of digital frugality, and suggests avenues for future research, such as exploring cultural and contextual variations in technology adoption and addressing challenges related to frugal innovation in emerging markets.*

KEYWORDS: digital practices in HRM, digital frugality, UTAUT

INTRODUCTION

Digital frugality, also known as digital eco-design or digital sobriety, refers to the responsible and efficient use of digital resources to minimize the environmental impact of the information and communication technology (ICT) sector. The main idea behind digital frugality is to reduce energy consumption, greenhouse gas emissions, and waste production associated with our digital activities. Frugal innovation is considered to be the future of innovation management and a concept to watch out for in the coming years (Zeschky, Widenmayer, & Gassmann, 2011).

The ultimate goal of innovation management is to create new concepts and move away from existing solutions (Trott, 2008). Frugal innovation rethinks the nature of innovation. “It is an ability to do more with less by creating more business and social value while minimizing the use of resources such as energy, capital, and time” (Radjou & Prabhu, 2014). Frugal innovation is developed in severe resource constraints; it

involves good quality and reasonably priced products or services even for customers with modest lifestyles. Frugal innovations are "good-enough, affordable products that meet the needs of resource-constrained consumers" (Zeschky, Widenmayer, & Gassmann, 2011).

It has the potential to enhance the competitive advantage of a firm as well as green supply chain initiatives and be an ideal model to create green products (Sharma & Iyer, 2012). All frugal solutions are characterized by affordability, robustness, user-friendliness, scalability, and an attractive value proposition (Tiwari & Herstatt, 2012). Frugal innovations are considered to be potentially disruptive and transformational (Woolridge, 2010) not only for emerging markets but also for developed markets (Immelt, Govindarajan, & Trimble, 2016). It is characterized by limited resources to create low-cost innovations that are sustainable for the environment and communities. These resource-constrained product development strategies have the ability to give rise to environmentally friendly products due to lower resource use and greater supply chain efficiencies compared to conventional product development approaches (Sharma, 2012).

In Tunisia, the adoption of digital frugality in HRM has not been studied, particularly the study of factors influencing the behaviors of HR managers. This study will focus on the factors influencing the adoption of digital frugal behaviors by Tunisian managers in the context of HRM.

This article is structured around three sections: the first section concerns the theoretical framework of research on frugal digital HRM. The second section concerns the research methodology, and the final section discusses the results and their implications.

Theoretical Framework of Research on Frugal Digital HRM:

Digital frugality can be applied to the field of human resource management (HRM) to minimize the environmental impact of digital practices in this domain. Here are some examples of digital frugality in HRM:

- Dematerialization of processes: Dematerialization of administrative processes related to HRM, such as contract management, attendance sheets, and pay slips, reduces paper and ink consumption. Electronic formats like PDF documents can be favored, and electronic document management platforms can be implemented.

- Online recruitment: Using online recruitment platforms reduces physical travel and CV printing, favoring electronic submission of applications and remote interviews via video conferencing.

- Distance learning: Online training, through e-learning modules and webinars, reduces travel and resources required for in-person training.

- Telecommuting management: Telecommuting can be encouraged, when possible, to reduce employee commuting. This also streamlines office use and energy resources related to work infrastructure.

- Awareness and training: It's important to raise awareness among employees about digital frugality, providing them with information on best practices, energy savings, and optimizing resource use in their digital tool usage.

By integrating digital frugality into HRM, organizations can reduce their environmental impact while improving operational efficiency. Digital frugality in HRM can also contribute to promoting a sustainable and responsible corporate culture by aligning digital practices with current environmental challenges. A frugal mindset is encouraged not only by a resource-scarce environment but also a higher tolerance for uncertainty (Soni & Krishnan, 2013).

The model developed in this work is classified as part of the Technology Acceptance Model UTAUT since it includes only a part of the original structure (Venkatesh et al., 2016) to explain the behavioral intention of using digital frugal HR applications.

Performance expectancy (PE) refers to the extent to which performance improvement is expected as a result of using specific new information or technologies (Venkatesh et al., 2003). We propose the following hypothesis for the purposes of this work:

H1- Performance expectancy influences the intention to use digital frugal HR applications

While effort expectancy is defined as the ease of use of the system or technology (Chan, 2010), Pynoo et al. (2011) highlighted the relationship between performance expectancy as the main influencer of usage intention impacted by effort expectancy. In line with this, Lu et al. (2017) also conducted a study that tested commercial acceptance (m-commerce), using a set of individual differences and cultural resources between Chinese and American consumers. These authors demonstrated that the impact of performance expectancy on effort expectancy is supported when it comes to adopting mobile technologies at the time of consumption. Based on the above, the following hypothesis was formulated:

H2- Effort expectancy influences the intention to use digital frugal HR applications

Venkatesh et al. (2003) defined facilitating conditions as the degree to which an individual believes that organizational and technical infrastructure exists to support system use. They added that facilitating conditions improve usage behaviors. Based on this discussion, we propose the following hypothesis:

H3. Facilitating conditions influence the intention to use digital frugal HR applications

According to Gogus and Nistor (2012), social influence (SI) is the degree to which an individual perceives that other important people believe he should use the new system. Venkatesh et al. (2003) asserted that social influence enhances behavioral intention. Following these considerations, we propose the following hypothesis:

H4. Social influence influences the intention to use digital frugal HR applications

RESEARCH METHODOLOGY

For our quantitative research, the chosen survey method is a quantitative questionnaire method. The sample consists of HR managers from various companies and departments in Tunisia. The sample was selected using the convenience method. Data collection was carried out through an online survey. We created an online questionnaire using Google Forms. The estimated average time to complete the questionnaire is 15 minutes. The survey took place in April 2023 and May 2023 (2 months), and our response rate was 7%. The online survey allowed us to automatically tally the responses and export them in Excel format. In the end, we obtained usable data (N= 71) for our study.

ANALYSIS AND DISCUSSION OF RESULTS

We employed Structural Equation Modeling (SEM) techniques as they allow testing dependency relationships among latent variables (Lacroux, 2009). We chose the Partial Least Squares (PLS) approach using the free "student" version of SMART PLS software downloadable from the internet for students.

Measurement Model Estimation

The analysis of the measurement model allows us to calculate internal consistency by checking composite reliability and to calculate the reliability of the measurement indicators.

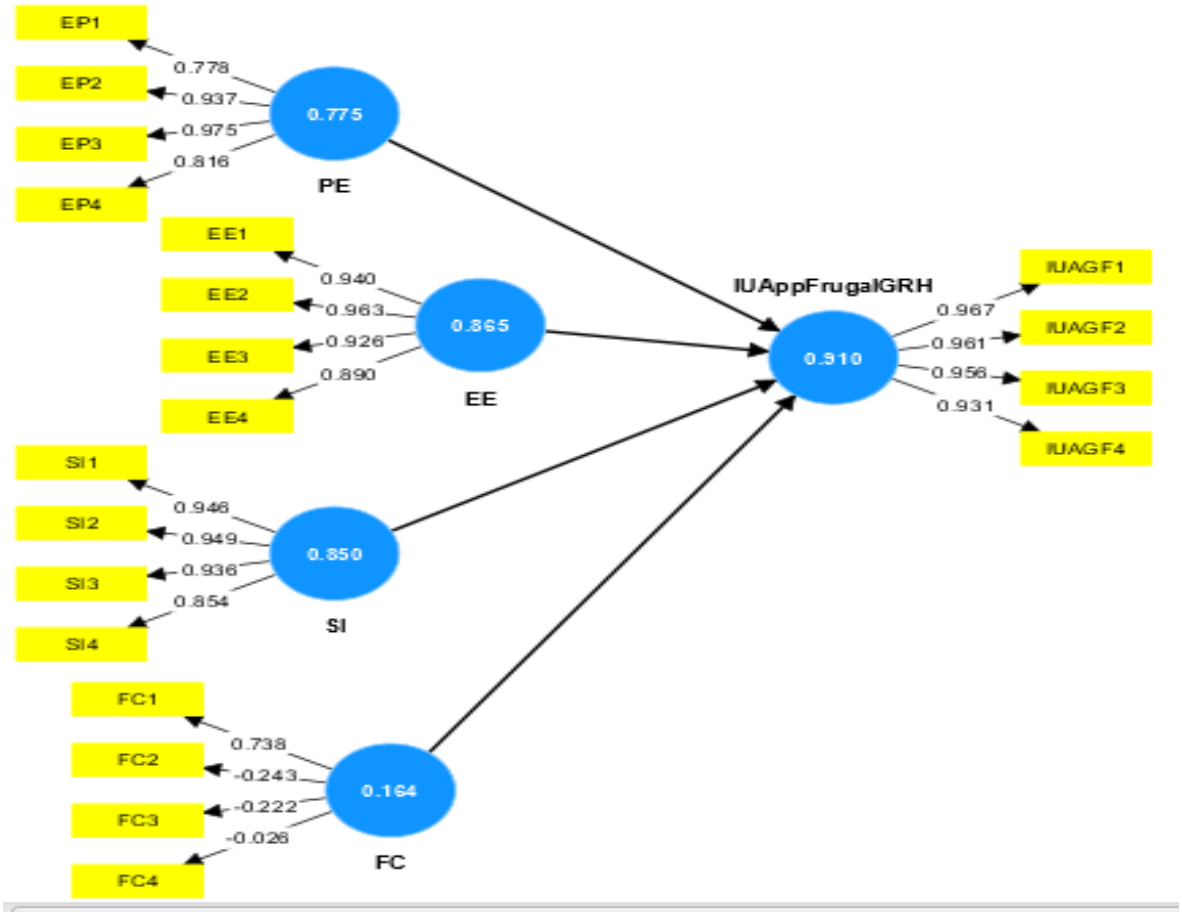

Figure 1: Measurement model (source: author using SMART-PLS software)

Construct Reliability

Composite reliability (CR) allows us to verify the reliability of each construct. According to Hair et al. (2014), they require each of these values to be greater than 0.7. As shown in the following table, the composite reliability values for the constructs in our research are all greater than 0.7 except for facilitating conditions (FC), which is not sufficient and is equal to 0.164. We will eliminate this variable.

Table 1: Construct reliability 1

	CR
EE	0.865
FC	0.164
PE	0.850
SI	0.775
IUAppFruglGRH	0.910

We will eliminate this last variable (FC) and re-estimate our structural model. Our new estimation is as follows:

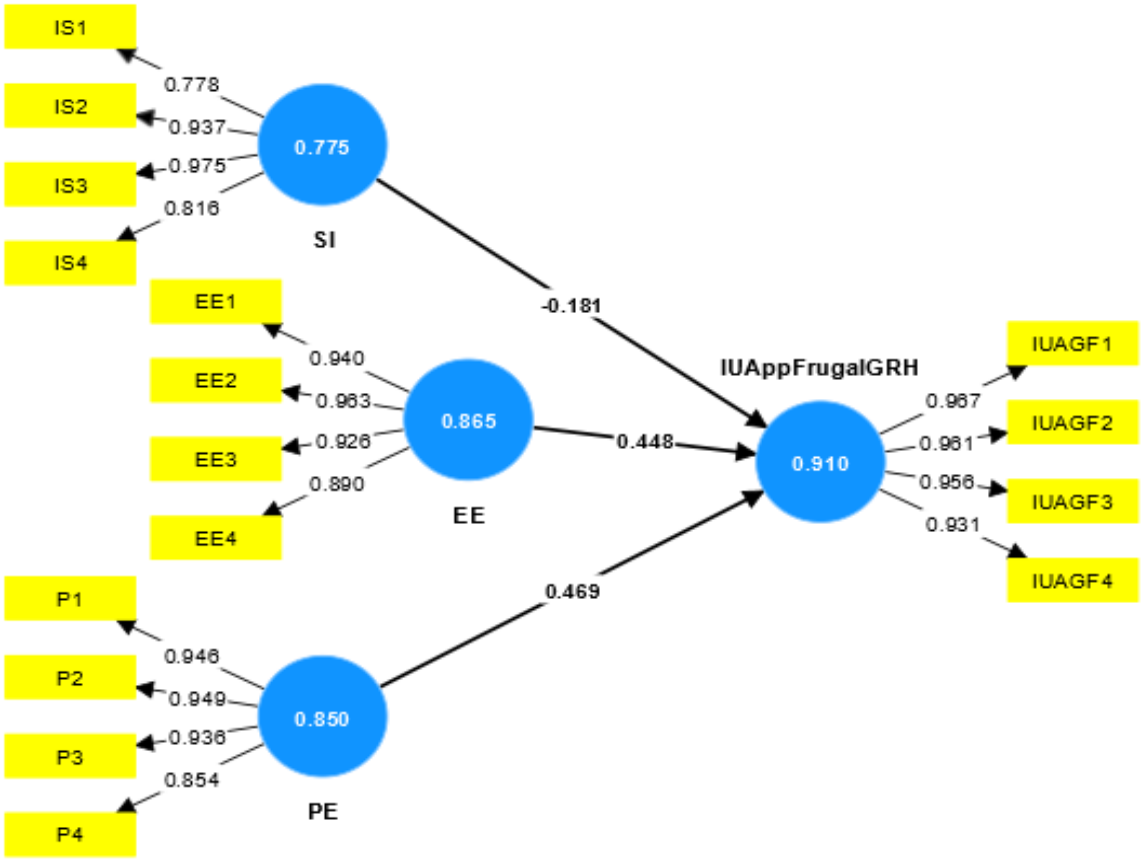

Figure 2: Second measurement model estimation after elimination.

Indicator Reliability

According to Hair et al. (2014), this reliability is verified when the factor loadings of the constructs (outer loading) are each greater than 0.5 and significant. The results regarding the indicators of our new model are satisfactory based on this condition.

Table 2

PE	***EE***	***SI***	***IUAppFrugalGRH***
0.778	***0.940***	***0.946***	***0.967***
0.937	***0.963***	***0.949***	***00.961***
0.975	***0.926***	***0.936***	***0.956***
0.816	***0.890***	***0.854***	***0.931***

Construct Convergent Validity (AVE: Average Variance Extracted)

Regarding convergent validity, we found it satisfactory for the three indicators Cronbach's Alpha, Rho_A, and AVE. These indices must exceed the threshold of 0.7 and even 0.8 according to Fornell and Larcker (1981). The following table attests to satisfactory internal validity.

Table 3: Table illustrating convergent validity of constructs with variable FC

Construct reliability and validity - Overview

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	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EE	0.948	0.951	0.962	0.865
FC	0.851	-1.577	0.018	0.164
IUAppFrugalGRH	0.967	0.969	0.976	0.910
PE	0.941	0.952	0.958	0.850
SI	0.918	1.149	0.932	0.775

Table 4: Table illustrating convergent validity of constructs without variable FC

Construct reliability and validity - Overview

Zoom (100%)

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	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EE	0.948	0.951	0.962	0.865
IUAppFrugalGRH	0.967	0.969	0.976	0.910
PE	0.941	0.952	0.958	0.850
SI	0.918	1.149	0.932	0.775

4.1.4 Discriminant Validity The Heterotrait-Monotrait (HTMT) ratio

HTMT is less than 1 as shown in the following table, so our overall measurement model is considered reliable and valid.

Table 5: Discriminant validity verification by HTMT ratio

Discriminant validity - Heterotrait-monotrait ratio (HTMT) - Matrix

	EE	IUAppFrugalGRH	PE	SI
EE				
IUAppFrugalGRH	0.779			
PE	0.680	0.756		
SI	0.061	0.072	0.218	

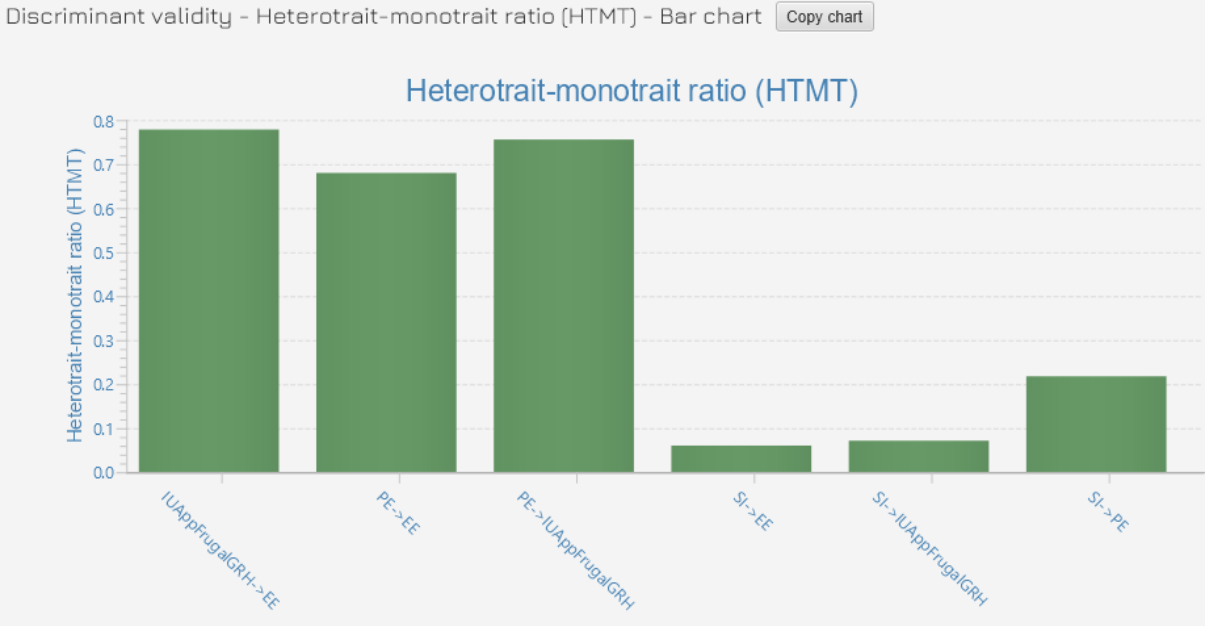

Figure 3: HTMT

Evaluating the Estimation of our Overall Model

Next, to evaluate the estimation of our overall model, we rely on the Standardized Root Mean Square Residual (SRMR) index. According to Garson (2016), the value of this index should be <0.08 to judge that the estimation of the overall model is good. This condition is met for our research as the SRMR value is 0.065.

Table 6: Adjustment indices

Model fit

	Saturated model	Estimated model
SRMR	0.065	0.065
d_ULS	0.572	0.572
d_G	1.167	1.167
Chi-square	224.697	224.697
NFI	0.758	0.758

Checking Structural Relationship Adjustment Indices R^2

For the dependent variable "intention to use digital frugal HR applications," the R^2 coefficient value of 0.693 is highly significant.

Table 7: R-square

R-square - Overview

	R-square	R-square adjusted
IUAppFrugalGRH	0.693	0.668

Checking Hypotheses

To test direct effects, we note the regression coefficients and significance of relationships from the bootstrapping procedure with a sample of 500. All these results are presented in the table 8 above.

Table 8

Path coefficients - Mean, STDEV, T values, p values Zoom (100%) Copy to Excel Copy to R

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EE -> IUAppFrugalGRH	0.448	0.441	0.130	3.438	0.001
PE -> IUAppFrugalGRH	0.469	0.468	0.133	3.520	0.000
SI -> IUAppFrugalGRH	-0.181	-0.151	0.099	1.826	0.068

Hair et al. (2014) argue that the significance of relationships is verified when the absolute values of the "t" test are greater than 1.96.

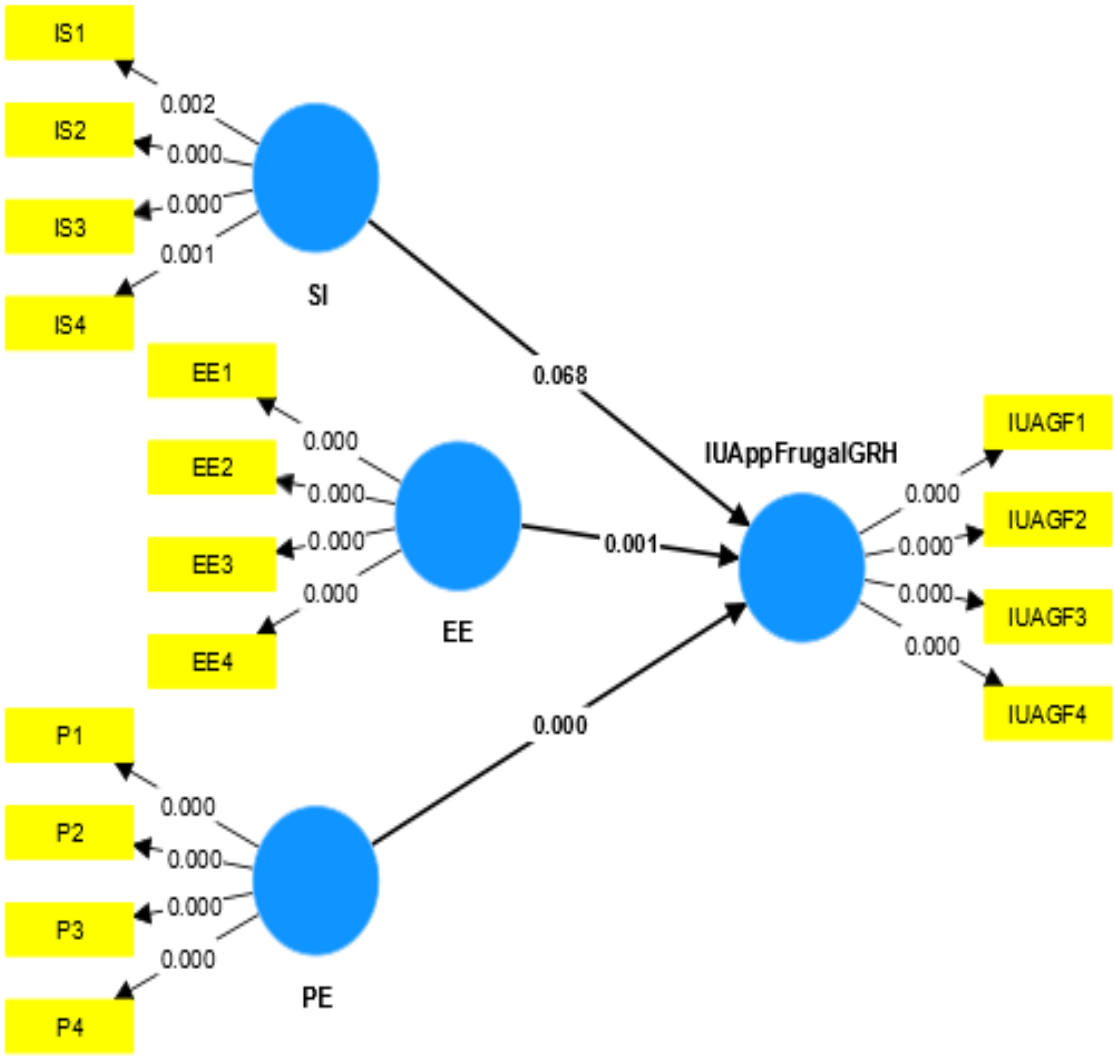

Figure 4: Structural model 2 after bootstrapping with sample = 500 (on link weights we find: P values)

Table 9: Summary table of our research hypotheses

Hypotheses	T value	P values	Verification
H1 : Performance expectancy → intention to use digital frugal HR applications	3.520	0.000	verified
H2 : Effort expectancy → intention to use digital frugal HR applications	3.438	0.001	verified
H3 Social influence → intention to use digital frugal HR applications	1.826	0.068	Not verified
H4 : Facilitating conditions → intention to use digital frugal HR applications	---------	---------- --	Not verified

CONCLUSION

While technology adoption is a highly interesting research question and has been extensively studied, the topic has not been thoroughly explored in the context of HRM in Tunisia. Our current research fills this knowledge gap. This contribution aimed to investigate the factors influencing the behavior of Tunisian HR managers in their intention to use digital frugal HR applications. The UTAUT model was leveraged in this research by exploring different facets of Tunisian HR managers' intention to use digital frugal HR applications. Additionally, we revealed the interesting role of social influence and effort expectancy in predicting the intention of HR managers. From a practical perspective, the results of this study can guide managers and directors responsibly. However, the results of this study have limitations that will provide opportunities for further research. Firstly, our empirical study is limited to a sample within the post-COVID Tunisian context. It will be important to test if the results hold true in other developing countries. Thus, we must consider cultural, social, and technological differences between countries. Another future extension of this study would be to expand the dataset to cover more managers. Therefore, further research can extend the UTAUT model by considering additional factors. Thirdly, the questionnaire data was collected at one point in time. A longitudinal study beyond the post-COVID-19 period should be considered. Frugal solutions are capable of uplifting the standard of living of individual communities to the next better level. The concept of frugal innovation is gaining momentum as experts have realized that frugality has to be the mindset of every business firm operating in emerging markets or the developed world.

Therefore, instead of offering outdated technologies from Western markets to emerging markets at lower prices, Western companies need to produce frugal innovations from scratch. These frugal innovators must devise low-cost strategies to handle resource limitations when innovating, developing, and delivering products and services to low-income users in emerging markets, where affordability, resources, and institutional constraints exist (Bhatti, 2012).

Frugal innovators need to build innovation capabilities by creating an innovation process that overcomes ‘the deficiency problem’ in generating cheap-priced original products (Lim, Han, & Ito, 2013).

The adoption of digital frugality by HR managers in Tunisia faces various specific obstacles, influenced by economic, cultural, and technological contexts. Transitioning from traditional HR processes to digital solutions poses complexities and requires significant adaptation, often met with resistance from employees and HR managers. Additionally, linguistic and cultural barriers, especially regarding English proficiency, can hinder effective adoption, necessitating adjustments to digital solutions. Limited internet connectivity in rural areas may further impede the adoption of cloud-based solutions, leading to inequalities in technology access. Insufficient training and awareness programs, coupled with data security concerns and high initial investment costs, present additional challenges. Integrating new technologies with existing systems and effectively managing change are critical for successful adoption, requiring strategic

planning and active employee involvement. By addressing these obstacles strategically, HR managers in Tunisia can optimize the benefits of digital frugality in their operations.

References

Lacroux, A. (2009). L'analyse des modèles de relations structurelles par la méthode PLS: une approche émergente dans la recherche quantitative en GRH. XXème congrès de l'AGRH, Toulouse, 9.

Bhatti, Y. A. (2012). What is frugal, what is innovation? Towards a theory of frugal innovation. Towards a Theory of Frugal Innovation (February 1, 2012).

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), 39-50.

Chan, 2010),

Gogus, A., Nistor, N., Riley, R. W., & Lerche, T. (2012). Educational technology acceptance across cultures: A validation of the Unified Theory of Acceptance And Use of Technology in the context of Turkish national culture. Turkish Online Journal of Educational Technology-TOJET, 11(4), 394-408.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. European business review, 26(2), 106-121.

Immelt, J. R., Govindarajan, V., & Trimble, C. (2009). How GE is disrupting itself. Harvard business review, 87(10), 56-65.

Lim, C., Han, S., & Ito, H. (2013). Capability building through innovation for unserved lower end mega markets. Technovation, 33(12), 391-404.

Lu, J., Yu, C. S., Liu, C., & Wei, J. (2017). Comparison of mobile shopping continuance intention between China and USA from an espoused cultural perspective. Computers in Human Behavior, 75, 130-146.

Pynoo, B., Devolder, P., Tondeur, J., Van Braak, J., Duyck, W., & Duyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: A cross-sectional study. Computers in Human behavior, 27(1), 568-575.

Radjou, N., Prabhu, J., & Ahuja, S. (2014). Jugaad Innovation: Pensa frugale, sii flessibile, genera una crescita dirompente. Rubbettino Editore.

Sharma, A., & Iyer, G. R. (2012). Resource-constrained product development: Implications for green marketing and green supply chains. Industrial Marketing Management, 41(4), 599-608.

Jha, S. K., & Krishnan, R. T. (2013). Local innovation: The key to globalisation. IIMB Management Review, 25(4), 249-256.

Tiwari, R., & Herstatt, C. (2012). Frugal innovation: A global networks' perspective. Die Unternehmung, 66(3), 245-274.

Herstatt, C., Tiwari, R., Buse, S., & Ernst, D. (2008). India's national innovation system: key elements and corporate perspectives. East-West Center Working Paper.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. Journal of the association for Information Systems, 17(5), 328-376.

Woolridge, A. (2010). The charms of frugal innovation, Special report. The Economist, 5.

Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal innovation in emerging markets. Research-Technology Management, 54(4), 38-45.