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The impact of human capital on Product innovation and Marketing innovation

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Abstract:

Generation of innovation may require specialized knowledge, skills and abilities which embed with individuals and their human capital. The knowledge, skills and abilities of these individuals can question the prevailing norms.

Firm-specific human capital acquires explicit knowledge through interaction among other employees, managers, members, technological, physical and other resources of a firm. These individuals remain and grow within firm boundaries through interacting and learning experiences by performing job assignments, socializing with different people and resources.

There is consensus among the knowledge-innovation researchers on transformation of knowledge. Transformation of knowledge must be preceded by changes in current norms and should offer new solutions to prevailing problems. Those knowledge, skills and abilities and expertise are the components of human capital that constitute the predominant source of new ideas, knowledge, and vital for innovation outcomes.

Innovation requires organizations to cater to individuals with a specific type of knowledge. Thus, it can be hypothesized that individuals with specialized knowledge of routine resources, firm's capabilities, habits, abilities and limitations will facilitate an environment of collaboration which in return will assist in the generation of innovation.

Keywords: Human Capital, Marketing innovation, Product innovation, Intellectual capital, Organizational performance.

1. Introduction:

There are vast studies that have investigated and proven that IC is significant towards organizational performance. One of them is human capital. Human capital is an amalgamation of genetic inheritance, attitude, education and people experience in their life and business. The most valuable asset in any business is human resources as compared to other capitals or equipment. However, it was also believed to be the most ignored asset by the firms. Human can be considered valuable asset or liability to an organization. Human capital refers to experts (Maryam Hashim, et al., 2015).

Human capital plays a lead role to process such knowledge. Such knowledge flow through human capital boosts organizational performance. Senior manager's capabilities, teaching and leadership quality should be used to produce an open-minded and conducive learning environment to support employees for completing their tasks. Similarly, companies' structural reform helps knowledge creation. Managers should create a learning environment by giving time, space and attention. Organizations can provide a good working space, a good database to reduce work hours and forms of interaction to discuss common organizational goals. Such structural facilities promote prevailing knowledge and influence innovation in the organization. Relational capital is quite important for organization's knowledge flow. Knowledge process leads to constructive benefits for organizational performance. Moreover, Customers and suppliers have wealth of knowledge and their efficient and effective utilization supports the organizations to accomplish the desired objectives. Based on prior literatures the following hypotheses are posited (Barkat, 2018).

Human capital is the heart of intellectual capital. It relates to employee's knowledge, competence, skill, capability and innovation. Employees generate intellectual capital through their competence, attitude and intellectual agility. Competence includes skills and education; attitude covers the behavioral dimensions of the employee's work while intellectual agility based on innovativeness and solution of business problems. Human capital consist of knowledge, talent and experience of employees. Human capital is a major source of value addition in organizations and it is based on skills, knowledge and expertise, competence, attitude, and intellectual agility of employees (Khalique, et al., 2011).

Human Capital includes anything associated by the people within the organization. It includes elements such as employees' tacit knowledge, skills, experience and their attitude. HC can be seen as a primary tool for an organization to learn by influencing the ability to acquire new knowledge. HC focuses on competencies, attitudes and intellectual agility. Among human capital elements, competency is the most frequently cited element of human capital. **Brooking (1996)** suggests six elements of human capital: educational levels, job-related licenses or qualifications, job-related knowledge, job potential, personality traits and job-related abilities.

Investment in human capital should be recognized as investment rather than costs, because expenditure on employees such as education and training produces human rather than physical or financial capital, leading to greater employee effectiveness and efficiency and consequently higher productivity. Furthermore, firms with more and better human capital can enhance their income, performance and market value (**Filipe Sardo, 2018**).

Domains of specific knowledge and skills can be related to the more effective acquisition and assimilation of new, in-depth knowledge within a narrow range of parameters. This can be connected to exploitation and incremental types of innovation. The researcher state that these can all be related to more exploratory learning, and exploratory organizations are related to more radical innovations. Investment in education may reflect a higher ability to create or improve new knowledge and skills. Also, knowledge and skills of employees are basic requirements for generating new and creative ideas. At the same time, scholars have concluded that knowledge and skills cannot individually contribute towards innovation (**Karchagi, Sofian, Amin, 2013**).

Employees generate intellectual capital through their competence, attitude and intellectual agility. Competence includes skills and education; attitude covers the behavioral dimensions of the employee's work while intellectual agility is based on innovativeness and solutions of business problems. Human capital consists of knowledge, talent and experience of employees. Human capital is a major source of value addition in organizations and it is

based on skills, knowledge and expertise, competence, attitude, and intellectual agility of employees (Khalique, Shaari, Abu Hassan, 2011).

Human capital is the most innovative feature for the organization to act according to the environmental changes that contribute to organizational performance through their knowledge, experience, and capabilities applied to improve the organizational efficiency. According to current studies, human capital is the most important factor in adequately raising organizational performance. (Aymen Abdulaali, 2018).

General human capital and company-specific human capital are the two types of human capital. The knowledge, experience, skills, and abilities of employees make up general human capital. The goal of company-specific human capital is to bring the finest candidates for organizational and business-to-organizational adaptation into the company. The following factors were cited by Özevren and Yıldız (2010) as indicators of human capital: employee satisfaction, added value per employee, rate of new hires, education level, training costs, experience period, and organizational recognition. It covers the values, cultures, and philosophies of businesses and society as well as the inherited traits, education, and viewpoints of employees. For organizations, human capital is a source of innovation and change. It is a quality that staff members can gain by continuing their education and learning. (Altindug and et al., 2019).

Human capital refers to the expertise, aptitude, and capacity of certain individuals in offering solutions to clients. The ability of a company's employees to use their aggregate expertise to find the best solutions is referred to as human capital. It is significant because it is a source of innovation and strategic renewal, whether it comes from daydreaming at work, brainstorming in a research lab, deleting outdated documents, re-engineering new procedures, honing one's own talents, or creating fresh leads for sales.

For organizations, individual skill is vital. This is a person's ability to respond under different circumstances. It involves knowledge, training, life experiences, morals, and social skills. All assets and structures, whether tangible physical goods or intangible relationships, are the

consequence of human action and ultimately depend on people for their continuous existence. People are the only true agents in business (Mir Dost, et al., 2016).

People build relationships, expertise, fresh approaches, and new goods that enable processes to function effectively. Unfortunately, when people depart, they also take their knowledge of relationships—formal, informal, internal, and external—with them.

Intellectual capital, or the dedication and skill of employees, is ingrained in how each person approaches and completes work as well as in how a company develops policies and methods to carry out work. For six reasons, it has escalated to a critical situation:

First, a company's only tangible asset is its intellectual capital. The majority of other assets, such as buildings, plants, machinery, and equipment, start to lose value the moment they are purchased. A company must develop its intellectual capital if it is to succeed. Making knowledge useful and converting intellectual capital into consumer value are both managerial responsibilities.

Second, knowledge work is expanding rather than contracting. Relationships built on people's expertise and dedication are often where service comes from.

Third, because the smartest workers are likely to discover employment options across several companies, those with the strongest intellectual capital have basically turned into volunteers. Employees do not labor for free, but they do have a choice in where they work, thus they essentially give their time to a company. Volunteers are loyal because of their emotional connection to an organization; they are more concerned with the significance of their labor than with financial gain. With this mentality, workers can easily switch companies.

Specialized knowledge, skills, and talents that are ingrained in people and their human capital may be needed for innovation generation. These people's knowledge, skills, and ability might challenge the accepted norms (Mir Dost, et al., 2016).

Explicit knowledge is acquired by firm-specific human capital through interactions with other staff members, managers, members, and other resources such as technology and physical assets. These people communicate and learn while carrying out their tasks, interacting with other people and resources, and developing within clear boundaries. The transformation of knowledge is a topic on which knowledge-innovation researchers agree. Changes in current standards must come before transformation of knowledge, which should also provide fresh approaches to pressing issues. The elements of human capital that make up the main source of new ideas and knowledge that essential for the consequences of innovation are those skills, abilities, expertise, and knowledge. Organizations must cater to people with a particular type of expertise if they want to innovate. Therefore, it may be postulated that people with specific knowledge of common resources, a company's capabilities, habits, and constraints will help to foster a collaborative environment, which will then help to foster creativity (Mir Dost, 2016).

2. Description of Data and Sample:

The purpose of the present study was to investigate the impact of human capital on marketing innovation. For achieving this, the researcher developed a model that demonstrates the different impact of human capital on:

- a) Marketing innovation
- b) Production innovation

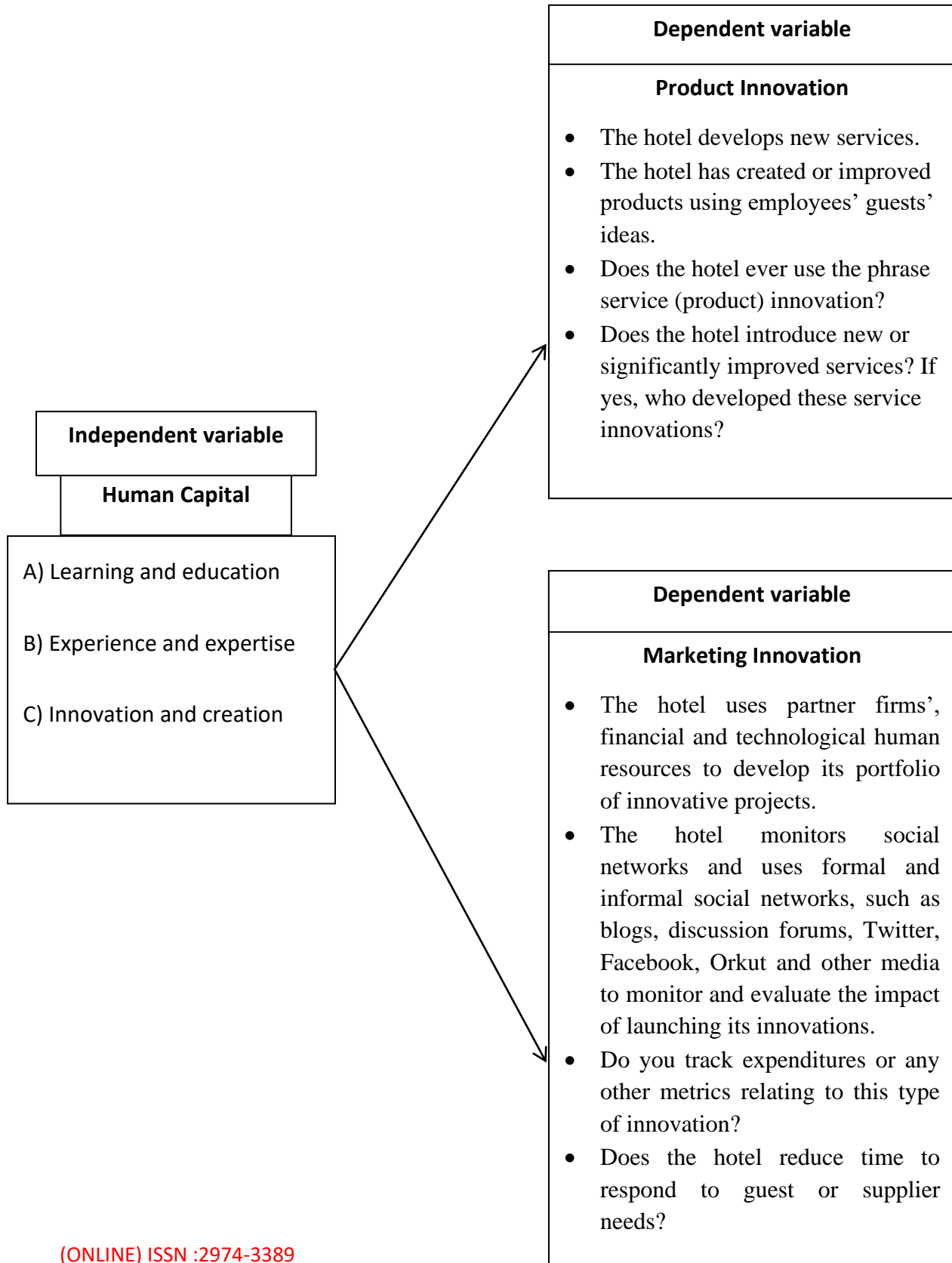
The sample size is crucial because it can influence the degree of variation in covariance matrices. In this regard, more trustworthy, valid, and extrapolable results will arise from having a sufficient sample and high-quality data gathering efforts.

The sample consists of 160 observations. The study period was from August 2022 to February 2023.

The study was conducted on the hospitality sector in Egypt, especially five-star hotels in Hurghada. Forty-five-star hotels in Hurghada were selected, and the survey was conducted

on the first-line leaders of those hotels, including managers and executives (top level management employees).

3. Research variables:



3.1 The independent variable (Human Capital)

The components of intellectual capital are the most significant sources of innovation. Human capital, which is one of the most valuable sources of innovation, consists of skills, creativity, and experience. When a firm offers training, development, and learning opportunities to its individuals, it will have invested in human capital. Thus, it ensures the development of innovation skills. For innovation, getting ideas from the environment of the enterprise, providing customer satisfaction and feedbacks, and developing new applications that can increase sales volume are possible with social capital. For the success of innovation, the participation of the whole organization, customers and suppliers should be ensured; their knowledge and experience should be involved in all processes of innovation from the thought stage to the implementation stage. Companies can create new knowledge and carry out new tasks in lucrative markets if knowledge management is also positively influenced by innovation studies and innovation efforts can be integrated with competitive orientation and strategies.

3.2 The dependent variables:

3.2.1. Product innovation:

Product innovation involves new or better material goods as well as newer intangible services. Process innovation involves new ways of producing goods and services.

Product innovation is the introduction of goods or services that are new or substantially improved.

Product innovation includes both the presentation of new products and services to market, and major improvements in the functional or user characteristics of existing goods and services (Oslo Guide, 2005). Process innovation includes major changes in methods, equipment and/or software. A new type of production method can be an example of process innovation. Marketing innovations, to increase the company's sales, aim to respond customers' needs in a more successful way, open new markets or locate a company's

product in the market in a new way. The new sales techniques, new financial method (venture capital) can be seen as marketing innovations. Organizational innovation can be defined as implementing a new organizational method in commercial practices, workplace organization or external relations for a company. Organizational innovations in commercial practices, involve the realization of new methods of organizing routines and procedures for conducting work (Bozkurt, et al., 2014).

3.2.2. Marketing innovation:

Marketing innovation is the implementation of new marketing methods and introducing significant changes in product design, packaging, product promotion and pricing. Organizational innovation is the creation or alteration of business practices, workplace organization and external relations.

4. Methodology:

The researcher will use a hypothesis-testing strategy, such as field research and structured questionnaires, to investigate the link between the relevant variables. This study uses a hypothesis testing research approach since its primary goal is to examine how human capital affects product innovation and marketing innovation.

The current study is carried out in five star hotels in Hurghada. In order to achieve the research purposes, research could be embarked on wherein the needed information is gathered.

5. Results:

Statistical Data Analysis

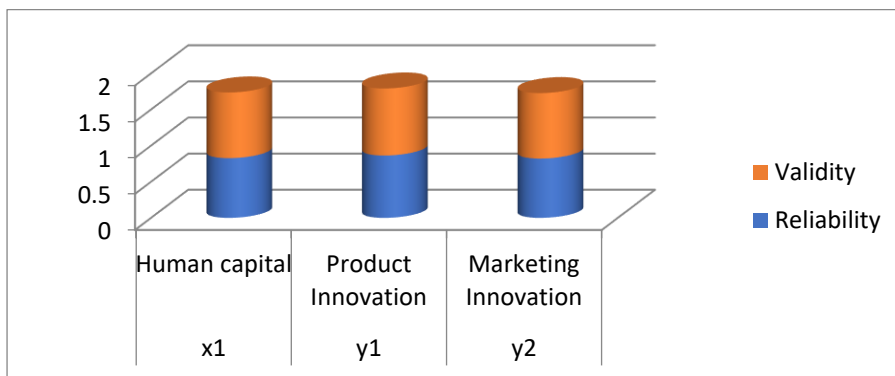
The researcher reviewed all the data to ensure completeness and validity of data entry and statistical analysis, and then discharged using the computerized Statistical Package for Social Sciences (SPSS) Statistical Package for Social Sciences.

This suggests most of the studies to assess the categories of the weighted average according to the criteria for the approval and full consent or not, within the framework of the Likert five- trend Likert Scale measure used in this research as follows:

scale	interval
1 - 1.79	(Strong disagree)
1.80 - 2.59	(Disagree)
2.60 - 3.29	(Entirely)
3.30 – 4.19	(Agree)
4.20 – 5	(Strong agree)

Table (1) Reliability and Validity of dimensions (The impact of human capital on marketing innovation and product innovation in the Hospitality industry in Egypt) By using the Cronbach alpha coefficient

ser	Dimensions	Reliability	Validity
x1	Human capital	.827	.909
y1	Product Innovation	.863	.928
y2	Marketing Innovation	.821	.906



The researcher used to check the reliability coefficient Cronbach Alpha, to measure the stability of the content variables of the study:

According to the independent variable (human capital x) of the reliability coefficient has reached (.863), Dependent variable (product innovation and business innovation) and the reliability coefficient has reached (0.863 for product innovation and 0.821 for marketing innovation), according to the research sample.

The Cronbach Alpha coefficient values of all dimensions are greater than (70%), which means a high degree of internal stability for all questionnaire paragraphs and therefore it

can be said that the measures on which the study is based to measure questionnaire paragraphs have internal stability of their paragraphs, enabling us to rely on these answers to achieve the objectives of the study and analyze its results.

Table (2) Descriptive Statistical (Mean, Std. Deviation, Relative importance and rank) about the axis (human capital)

phrases	Mean	Std. Deviation	Relative importance	Rank
1- Learning and Education				
1-The hotel devotes a lot of time and effort to update and develops employee's knowledge and skills.	3.19	1.52	63.80	2
2-The hotel employees undergo continuous training programs every year.	3.05	1.38	61	3
3-The hotel's services have been continually improving over the past few years.	4.15	.97	83	1
4-Most of the employees have a high level of education / qualification	2.13	1.37	42.60	5
5-Employees' learning and education affect the hotel's productivity.	2.95	1.38	59.00	4
Mean Average	3.09	.71	61.84%	-
2- Experience and Expertise				
6-The hotel's employees are very experienced in their respective areas.	3.72	1.01	74.40	2
7-The hotel's employees consistently perform at their best.	3.33	1.28	66.60	3
8-The majority of employees have worked for the hotel for many years (employee turnover is very low).	3.25	1.28	65	4
9-Employees' experience and expertise affect the hotel's productivity.	3.89	1.02	77.80	1
Mean Average	3.54	.76	70.97%	-
3- Innovation and Creation				
10-The hotel's employees are keen to voice their opinions in group discussions.	2.42	1.43	48.40	7
11-The hotel's employees usually come	3.35	1.35	67	3

phrases	Mean	Std. Deviation	Relative importance	Rank
up with new ideas.				
12-Large numbers of new ideas are launched compared with competitors.	3.93	1.09	78.60	1
13-The hotel employees are continuously encouraged to bring new knowledge and ideas to the business and share their knowledge with their colleagues.	3.33	1.28	66.60	4
14-The hotel systems support staff innovation.	3.49	1.37	69.80	2
15-The hotel's employees are satisfied with their hotel's innovation policies and programs.	3.17	1.35	63.40	5
16-The hotel's employees are highly motivated and committed to share new great ideas within the hotel as should be.	3.01	1.39	60.20	6
Mean Average	3.24	.67	64.86%	-
Total: Human capital	3.29	.50	65.89%	-

The previous table illustrated the following:

The general trend of the study variable (**Human capital**), **x1** indicates that it is towards between (neutral), (Agreement), with mean of (3.29), and the Std. Deviation (0.50), with Relative importance (**65.89%**).

Learning and Education

The general trend of the study variable (Learning and Education), dimension indicates that it is towards the (Agreement and neutral), with mean of (3.09), and the Std. Deviation (0.71), with Relative importance (61.84%).

The most Important statements are (The Hotel's services have been continually improving over the past few years), (The Hotel devotes a lot of time and effort to update and develops employee's knowledge and skills), with Relative importance (83%), (63.80%), respectively.

And the least important statement is, (Most of the employees have a high level of education/qualification), with Relative importance (42.60%), according to the responses of the sample of the study.

Experience and Expertise

The general trend of the study variable (Experience and Expertise), indicates that it is towards the (Agreement), with mean of (3.54), and the Std. Deviation (0.76), with Relative importance (70.97%).

The most Important statements are (Employees' experience and expertise affect the hotel's productivity), (The Hotel's employees are very experienced in their respective areas), with Relative importance (77.80%), (74.40%), respectively.

And the less important statement is, (The majority of employees have worked for the hotel for many years (employee turnover is very low)), with Relative importance (65%). According to the responses of the study sample

Innovation and Creation:

The general trend of the study variable (innovation and Creation), indicates that it is going towards the (Agreement and neutral), with mean of (3.24), and the Std. Deviation (0.67), with Relative importance (64.86%).

The most Important statements are (Large numbers of new ideas are launched compared with competitors), (The Hotel systems support staff innovation) and (The Hotel's employees usually come up with new ideas), with Relative importance (78.60%), (69.80%),(67%), respectively.

And the less important statement is, (The Hotel's employees are keen to voice their opinions in group discussions), with Relative importance (48.40%), according to the responses of the study sample.

Table (3) Descriptive Statistical (Mean, Std. Deviation, Relative importance and rank about the axis (dependent variables)

Phrases	Mean	Std.	Relative	Rank
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		Deviation	importance	
1- Product Innovation				
1-The hotel develops new services.	4.34	896.	86.80	2
2-The hotel has created or improved products using employees' guests' ideas.	4.46	575.	89.20	1
3-Does the hotel ever use the phrase service (product) innovation?	3.17	1.636	63.40	4
4-Does the hotel introduce new or significantly improved services? If yes, who developed these service innovations?	3.93	1.339	78.60	3
Mean Average	3.97	.61	79.50%	
2- Marketing Innovation				
5-The hotel uses partner firms' financial and technological human resources to develop its portfolio of innovative projects.	4.31	794.	86.20	1
6-The hotel monitors social networks and uses formal and informal social networks, such as blogs, discussion forums, Twitter, Facebook, Orkut and other media to monitor and evaluate the impact of launching its innovations.	3.77	1.045	75.40	3
7-Do you track expenditures or any other metrics relating to this type of innovation?	3.39	1.310	67.80	4
8-Does the hotel reduce time to respond to guest or supplier needs?	4.05	1.077	81	2
Mean Average	3.87	.70	77.53%	-

The general trend of the study variable (Business innovation), γ indicates that it is towards the between (strongly Agree) and (Agree), with mean of (3.77), and the Std. Deviation (0.37), with Relative importance (75.60%).

A) Product Innovation

The general trend of the study variable (**Product Innovation**), indicates that it is towards the (strongly Agreement and Agreement), with mean of (3.97), and the Std. Deviation (0.61), with Relative importance (**79.50%**).

The most Important statements are (The hotel has created or improved products using employees, guests' ideas), (The hotel develops new services), with Relative importance (89.20%), (86.80%), respectively.

And the less important statement is, (Does the hotel ever use the phrase service (product) innovation), with Relative importance (63.40%), according to the responses of the study sample.

B) Marketing Innovation

The general trend of the study variable (**Marketing Innovation**), indicates that it is towards the (Agreement), with mean of (3.87), and the Std. Deviation (0.70), with Relative importance (**77.53%**).

The most Important statements are (The hotel uses partner firms', financial and technological human resources to develop its portfolio of innovative projects), (Does the hotel reduce time to respond to guests or supplier needs), with Relative importance (86.20%), (81%), respectively.

And the least important statement is, (Do you track expenditures or any other metrics relating to this type of innovation), with Relative importance (67.80%). According to the responses of the study sample.

-Prove the hypothesis research:

H₁₋₁: Human capital has a significant positive impact on Product Innovation.

-Variables Hypothesis

- Human capital (independent)
- Product Innovation (dependent) **y₁**

-Statistical method used:

Was used correlation coefficient Pearson

Table (4) Correlation between Human capital and (Product Innovation)

By using Pearson correlation

Relationship	r	Sig.
Human capital and Product Innovation	0.432	.01**

** correlation is significant level 0.01

The values of the correlation coefficients (r) is (.432) with a significant level less than (.01).indicate a statistically significant relationship between the Human capital and Product Innovation.

Accepted the statistical alternative hypothesis of a relationship between Human capital and Product Innovation.

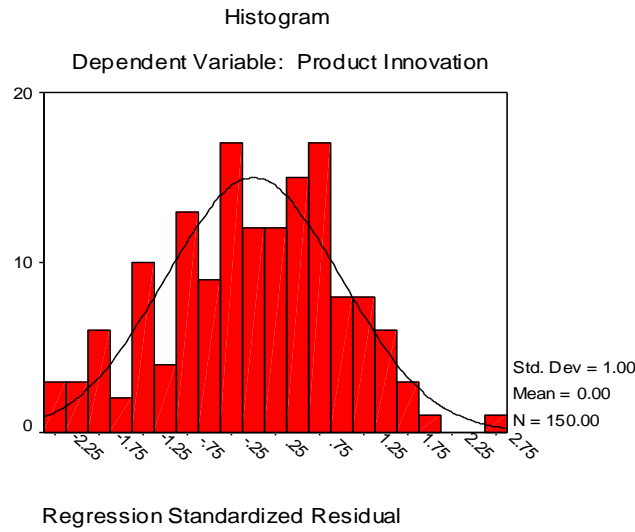
- Regression equation to prove the extent to which the impact (Human capital) on (Product Innovation)

Table (5) The impact of "Human capital" on " Product Innovation "

Using Liner Regression

Independent variables	β	t. test		F. test		R ²
		Value	Sig.	Value	Sig.	
Constant	2.08 7	6.352	.01**	33.887	**.01	18.6%
Human capital	.432	5.821	.01**			

** significant level 0.01



4-Equation of the form:

Product Innovation = 2.084 + .432 Human capital

-Prove the research hypothesis:

Accepted the statistical alternative hypothesis there is an impact of "Human capital on Product Innovation".

H₁₋₂: Human capital has a significant positive impact on Marketing Innovation.

-Variables Hypothesis

- Human capital (independent)
- Marketing Innovation (dependent)

-Statistical method used:

Correlation coefficient Pearson

Table (6) Correlation between Human capital and (Marketing Innovation)

By using Pearson correlation

Relationship	r	Sig.
Human capital and Marketing Innovation	0.392	.01**

** correlation is significant level 0.01

-The values of the correlation coefficients (r) is (.392) with a significant level less than (.01).indicate a statistically significant relationship between the Human capital and Marketing Innovation.

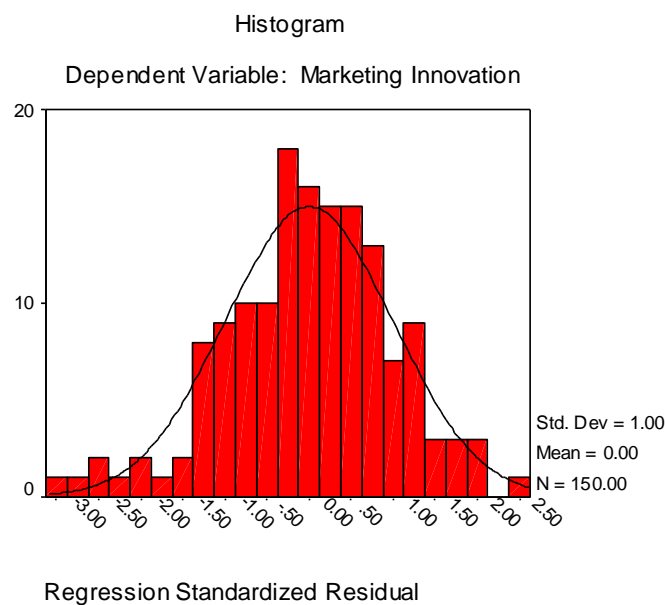
Accepted the statistical alternative hypothesis of a relationship between Human capital and Marketing Innovation.

- Regression equation to prove the extent to which the impact (Human capital) on (Marketing Innovation)

Table (7) The impact of "Human capital" on" Marketing Innovation "
Using Liner Regression

Independent variables	β	t. test		F. test		R ²
		Value	Sig.	Value	Sig.	
constant	1.88 3	4.850	.01**	26.900	** .01	15.4%
Human capital x1	.392	5.187	.01**			

** significant level 0.01



4-Equation of the form:

Marketing Innovation = 1.883 + .392 Human capital

Accepted the statistical alternative hypothesis there is an impact of "Human capital on Marketing Innovation".

Conclusion:

- The overall characteristics of human capital at proportional weighted mean value 65.89%, this should the hotels have acceptable level of experience and expertise, it represents 70.97%, innovation and creation field which represents 64.86% and learning and education represents the lowest proportional weighted mean value 61.84%.
- Hotels have a significant wealth in its staff members, experience and expertise and "innovation and creation" in all the fields / areas.
- Major concern is that "education and learning" does not have much impact as "experience and expertise" and "learning and education".
- The independent variable (Human capital) explains (18.6%) of the total change in the dependent variable (Product Innovation), which have a significant significance.
- The independent variable (Human capital) explains (15.4%) of the total change in the dependent variable (Marketing Innovation), which have a significant significance.
- The results of the previous table confirmed the existence of a statistically significant impact of all dimensions (Human capital) on the (Product Innovation) according based on the Test (T) equal (5.821), where we find that the level of indication is less than 0.01.
- To test quality of the conciliation model as a whole, was used for test (F-test), where the value of the test is (33.887), which are significant at a level less than (0.01), which indicates the quality of the impact significant of the regression model on (Product Innovation).
- The existence of a statistically significant impact of all dimensions (Human capital) on the (Marketing Innovation) according based on the Test (T) equal (5.187), that the level of indication is less than 0.01.

- To test quality of the conciliation model as a whole, using (F-test), where the value of the test is (26.900), which are significant at a level less than (0.01), which indicates the quality of the impact significant of the regression model on (Marketing Innovation).

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